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THE EFFECTS OF ACTH AND ADRENAL STEROID THERAPY ON GROWTH IN CHILDREN

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THE EFFECTS OF ACTH AND ADRENAL STEROID THERAPY ON GROWTH IN CHILDREN

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I wish to express my sincere thanks to my advisor, Dr. Robert E. Cooke, for his most kind assistance and criticisms.

I also wish to thank the members of the Department of Pediatrics for their aid in compiling the data used in this thesis.

DEDICATION

To

B L P

V M P

J R P

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I. INTRODUCTION

With the introduction of the adrenal steroids into the theraputic armamentarium, their use has become exceedingly widespread, especially in such pediatric diseases as rheumatic fever and nephrosis. In light of this and the seeming dispute among various authors about their effect on the linear growth of children, it was decided to review the records of the children who have been on long term steroid therapy at The Grace-New Haven Community Hospital, both as in-patients and out-patients, to attempt to determine if there is any discernable effect of these drugs on the linear growth of young children.

II. REVIEW OF THE LITERATURE

Since the adrenal steroids and ACTH came into general theraputic use in 1950, much has been written about their various effects and possible toxicity. The majority of the work with these hormones has been done with experimental animals. With the exception of statements by Crawford[1] and Blodgett et al[2,3] to the effect that theraputic doses of these hormones possibly inhibit linear growth in children, there has been little specific mention concerning this effect. It is the feeling of others that

ACTH and Cortisone do not inhibit growth but that they may in some instances accelerate growth in children.[4]

The majority of the experimental work on this subject weighs heavily on the side of those who believe that growth is inhibited. Meites[5] found that doses of as little as 0.5 mg. per day in rats for thirty days inhibited body growth as measured by weight. These animals were, however, on a Vitamin B-12 deficient diet. Wahlstrom et al[6] found that doses of 20 mg. daily given to baby pigs on a Vitamin B-12 deficient diet not only increased symptoms due to the vitamin deficiency but led to death in many instances and caused an increase in the urinary output of Vitamin B-12.

Buno et al[7] showed that chick femurs incubated in vitro in solutions of cortisone failed to grow at the normal rate and that there was a growth spurt following the transfer of the femurs to normal nutrient solutions not containing cortisone. Follis[8] working with paired rats showed that doses of over 20 mg. per kilo per day caused a cessation of bone growth when he used cortisone acetate. Following serial sections and microscopic study it was his contention that the cessation of growth was due to a stoppage in the osteolytic activity in the bones.

Palmer et al[9] compared the effects of ACTH, cortisone

and desoxycorticosterone (DOCA) in young rats and found that ACTH and DOCA minimally affected growth as measured by body weight while cortisone showed a marked ability to inhibit growth in these animals. Selye[10] attempted to counteract this depression of growth in rats by giving somatotrophic hormone (STH). By adjusting his doses of STH he was able to prevent the effects of cortisone which in the controls resulted in thymolysis, decrease in growth, adrenal and splenic atrophy.

In clinical practice, there have been few controlled series. Hill[11] reviewed a group of 43 allergic children who were being given doses of cortisone up to 75 mg. per day for thirty months. Twenty-four of these children gained in height at below the average rate, 15 above the average and 4 the same as the average. For the group there was an aggregate growth of 80.75 inches compared to 86.20 inches for a group of normals under the same conditions or a deficit of 7% in the cortisone treated children. However, only in four of his cases was the deficit enough to be of possible importance. His work was reviewed by Dr. Harold Stuart of the Harvard School of Public Health and by Dr. Robert Reed and Miss Elizabeth Grant, associated statisticians who agreed that "the figures provide no satisfactory evidence that there is a real difference between these cortisone-treated children and normal children in respect to rate of growth."

Blodgett et al[2], however, in a group of 36 patients have had different results. Their groups consisted of 11 patients with adrenocortical virilism, 3 with hypopituitarism, 2 with Addison's disease, and 20 with severe allergic disorders. In this group they found that after a few weeks of Cortisone therapy statural growth and skeletal maturation tended to be retarded. Doses of as little as 4 to 20 mg. per square meter per day had a marked depressant effect in the hypopituitary patients. Thirty-five to 50 mg. per square meter per day resulted in depression in the patients with adrenalcortical virilism. In their "endocrine normal" group (the patients with severe allergy) they found that a minimum of 45 mg. of cortisone per square meter per day was required to produce this effect. In all this series with the exception of the patients with hypopituitarism there was a tendancy for a growth spurt to occur following the cessation of therapy of the reduction of the dose level to below the minimum required to produce the depressant effect. This spurt tended to restore these children to their pre-therapy percentile rank and the children's ultimate potential stature was not changed.

III. SUBJECTS AND MATERIALS

The records of 226 children were reviewed. These

children represented the group of children who were admitted to Grace-New Haven Community Hospital or seen in the Pediatric Out-patient Clinic between January 1, 1949, and January 1, 1956, with illnesses that are now routinely treated with adrenal steroids or ACTH. Of these 226 children, 72 received treatment with steroids or ACTH. Twenty-seven of these met the following requirements for inclusion in the study group: 1. Therapy for at least 21 days regardless of dosage. 2. Patient did not expire during the course of therapy or during the follow-up period. 3. Patient must fall in the age group 1-13 years so that weight and height could be adequately plotted on The Children's Medical Center, Boston-Anthropometric Chart. 4. Patient's record must be adequate as to dosage, record of height and weight, and follow-up continued in the Pediatric Out-patient Department of Grace-New Haven Community Hospital. Of the remaining 45 children who received therapy but who did not meet the above criteria, 23 had inadequate records, 11 expired, 5 were too old and 6 received therapy for less than three weeks.

IV. METHODS

Each patient's height and weight were plotted on The Children's Medical Center, Boston-Anthropometric Chart for as long as the records were available regardless of

the length of therapy or duration of illness. This data was taken from each child's chart. The measurements were made in the out-patient department or on the in-patient service. Length measurements were made standing without shoes, and weighing was done with the patient nude or with light underclothing as garments.

A careful record was made of the length of therapy, dosage and kind of medication. All doses were computed in milligrams and length of therapy in days. From this the average daily dose was calculated; and, in the cases of the extremes and the patients on Cortisone therapy, the dose in milligrams per square meter of body surface was also calculated.

The subjects were divided into groups depending on the type of therapy. These groups were four in number: 1. Cortisone 2. ACTH (adrenalcortical thropic hormone) 3. Meticortin (prednisone) 4. Mixed (various combinations of the above three and hydrocortisone). No attempt was made to divide the children according to disease. Tables 1, 2, 3, and 4 show the results for these groups.

Each child's expected growth during the period of therapy was calculated by extrapolation of their growth curve on the Children's Medical Center, Boston-Anthropometric Chart and each child's deviation from this expected growth was calculated in centimeters. From this data each child's percentage of expected growth was also

calculated with 100% taken to mean that the child attained his or her expected growth during the period of therapy. This data is shown in Table 5 along with the averages for the group.

The plot of each child's growth curve along with the data for the length of therapy is shown in Table 6.

V. RESULTS

The study group consisted of 12 children with rheumatic fever, 12 with nephrosis and 3 with rheumatoid arthritis. The longest period of therapy on a single drug was 866 days on an average daily dose of 39.69 mg. of ACTH gel (B. G. C58046) or 49.6 mg. per square meter per day. The largest average daily dose was 173.91 mg. of Cortisone for 92 days (A. S. 41-15-37) or 158 mg. per square meter per day.

Eleven of the children showed no deviation from their expected growth. Ten grew more than expected and 6 less. The group as a whole had an expected growth of 265.0 cm. during the period and an actual growth of 267.0 cm. The total algebraic deviation from the expected growth being +2.0 cm. with an average increment of 0.074 cm. per patient. This means that the group as a whole grew 100.75% of its expected growth. However, the average of each patient's percent of expected growth was 96.77% (Table 1).

The group treated with Cortisone alone consisted of 10 patients with rheumatic fever and 2 with rheumatoid arthritis. This group had an expected growth of 71.5 cm. during the period of therapy and an actual growth of 72.0 cm. (100.69% of expected growth for the group). The average of each patient's percent of expected growth in this group was 93.85%. These patients were treated with Cortisone for an average of 166.6 days (range 25-806) with an average daily dose of 80.79 mg. (range 45.00 to 161.16) per square meter per day (Table 2).

The one patient (J. P. C40827) treated with ACTH alone showed no deviation from her expected growth. She received an average of 75 mg. per square meter per day for 26 days (Table 3). Table 4 shows the data on the only patient receiving prednisone as her sole source of steroid. This patient grew 1.5 cm. more than her predicted growth (142.90% of predicted growth) during her 116 day period of therapy during which time she received 21.7 mg. of prednisone per square meter per day.

In the group treated with various drugs in combination (13 patients) there were 12 with nephrosis and one with rheumatoid arthritis. This group as a whole had an expected growth of 189 cm. during the period of therapy and an actual growth of 189 cm. (100% of expected growth for the group). The average of each individual's percent of expected growth in this group was 97.04%. The tabulated

data for these patients along with their individual doses is shown in Table 5.

VI. DISCUSSION

Most of the opinion that therapy with adrenal steroids and ACTH might in some cases inhibit growth in children seems to stem from the fact that children with Cushing's Disease do not seem to grow as well as normal children[12]. The experimental work with animals has yielded varied results, but in the main point to inhibition of growth. However, most of these experiments were done using very large doses of Cortisone and in many cases the animals were made vitamin deficient during the experiment. Clinically Blodgett et al[2] have shown that moderate doses of Cortisone produce growth retardation in "endocrine normal" patients.

One of the first problems in studying this subject arises from the fact that changes in weight which are used in animal experiments are relatively useless in the clinical situation since the disease itself might influence weight, as in nephrosis where marked edema is common. Also steroids themselves might influence weight because of their salt retaining properties and tendancy to increase the apetite. In the present study group, weight varied considerably. This appeared to depend on the stage of the disease in many of the nephrotics and on the amount of steroids given in other

patients. Many of the children showed marked Cushinoid tendancy and appeared to have gained considerable weight showing edema. However, by inspection the group as a whole appeared to follow the proper channels on the grid if one allows for wide swings due to the above influences. None of the children showed any marked propensity not to gain weight and when their disease was under control and dosage levels were high they tended to do the opposite at an accelerated rate. Because of the difficulties in evaluating changes in weight, it was decided to concentrate on changes in height (linear growth) and all conclusions in this study are based on these figures.

The finding that the group as a whole had an average increment of 0.047 cm. in linear growth above that which could be expected for these children during the period of therapy certainly falls within the limits of measurement error. It would appear, since the group grew 100.75% of its expected growth, that long term steroid and ACTH therapy even in large doses did not specifically retard the growth of these children. The group of children treated with Cortisone alone fall within Blodgett's "endocrine normal" group and received equivalent or larger doses of Cortisone for sufficient time for retardation to occur. Some of these children's percent of expected growth was low. However, these were children who were in general on Cortisone for a short period of time so that a small

deviation from their expected growth in centimeters was reflected as a large percentage deviation. Those children in this group who were on Cortisone for the longest period were the ones who most closely approximated 100% of their expected growth.

The reasons for this group differing so strikingly from the results in Blodgett's comparable group are not immediately evident. All children in this group received supplemental potassium and were being given prophylactic penicillin. Blodgett's group was not receiving supplemental potassium, and some of the children in his group were slightly hypokalemic. It is possible that even this mild hypokalemia may have been instrumental in the apparent retardation of growth in his group.

In this study there were 3 children (M. B. 38-57-61, D. I. C32086, and A. S. 41-19-96) who showed rather marked retardation of growth during the course of their illness and therapy. At the time of this study they were still on therapy and there has been no opportunity to observe any rebound if their steroid therapy has depressed their growth.

It is entirely possible in the case of two of these patients (M. B. and A. S.) that the severity of their illness (nephrosis) has been instrumental in this depression since no record is available of their growth pattern prior to the onset of their illness and therapy.

It is a well known fact that serious illness may be a factor in failure to grow[13,14,15,16]. One patient (J. H. C52073) showed a marked depression of growth during the first stages of his nephrosis over a period of two years during which time he was admitted to the hospital eight times because of exacerbations of his illness. However, when adequate therapy was instituted and remission obtained he regained his original percentile rank while still on large doses of Cortisone (88.0 mg. per square meter per day for 746 days).

One would expect, if ACTH and adrenal steroids have a growth depressant effect, this depression to continue during the period of therapy even though the underlying illness is well controlled. This has not proven to be the case in the patients under study in this group.

In view of the finding that this group grew 100.75% of its expected growth as a whole and that the average of the percents of expected growth was 96.77%, a figure not considered to be a significant deviation from normal by Dr. Harold C. Stuart[17], it seems valid to conclude that in this group of patients ACTH and adrenal steroid therapy showed no tendancy to retard growth in children who were otherwise "endocrine normal".

VII. SUMMARY

1. Twenty-seven children receiving long term ACTH and adrenal steroid therapy have been studied in an attempt to determine these drugs possible effect on linear growth.
2. These children had an expected growth of 265 cm. and an actual growth of 267 cm. during the period of therapy. The group as a whole, therefore, grew 100.75% of its expected growth while on long term therapy.
3. The literature has been reviewed and the discrepancies between the findings in this group and those of other authors have been discussed.

APPENDIX

TABLE 1

Patient	Diagnosis	Therapy	Expected Growth	Actual Growth	Deviation	% of Expected Growth
C.H. C61952	R.A.	C	21.5 cm.	22.0 cm.	+0.5 cm.	102.30
D.R. C10014	R.F.	C	1.0 cm.	1.0 cm.	0.0 cm.	100.00
G.A. 37-89-89	R.F.	C	2.0 cm.	1.0 cm.	-1.0 cm.	50.00
C.C. B76663	R.F.	C	3.0 cm.	4.0 cm.	+1.0 cm.	133.33
A.B. C22347	R.F.	C	3.0 cm.	4.0 cm.	+1.0 cm.	133.33
M.H. C18985	R.F.	C	3.0 cm.	3.0 cm.	0.0 cm.	100.00
J.C. C27967	R.F.	C	16.0 cm.	17.0 cm.	+1.0 cm.	106.25
P.M. 38-96-86	R.F.	C	1.0 cm.	1.0 cm.	0.0 cm.	100.00
D.S. 41-71-26	R.A.	C	7.0 cm.	7.0 cm.	0.0 cm.	100.00
J.S. 42-86-12	R.F.	C	10.0 cm.	10.0 cm.	0.0 cm.	100.00
R.L. B973	R.F.	C	2.0 cm.	1.0 cm.	-1.0 cm.	50.00
W.Y. 42-84-41	R.F.	C	2.0 cm.	1.0 cm.	-1.0 cm.	50.00
J.P. C40827	R.F.	ATCH	1.0 cm.	1.0 cm.	0.0 cm.	100.00
K.O. 43-11-71	R.F.	M	3.5 cm.	5.0 cm.	+1.5 cm.	142.90
M.P. 41-36-50	N.	Mix	6.0 cm.	6.0 cm.	0.0 cm.	100.00
A.E. C44968	N.	Mix	16.0 cm.	18.0 cm.	+2.0 cm.	112.50
A.S. 41-15-37	N.	Mix	9.0 cm.	5.0 cm.	-4.0 cm.	55.60

TABLE 1 (Cont.)

Patient	Diagnosis	Therapy	Expected Growth	Actual Growth	Deviation	% of Expected Growth
R.H. 39-20-87	N.	Mix	16.0 cm.	18.0 cm.	+2.0 cm.	112.50
F.A. 41-19-96	N.	Mix	8.0 cm.	8.0 cm.	0.0 cm.	100.00
L.J. C41738	N.	Mix	17.0 cm.	17.0 cm.	0.0 cm.	100.00
D.I. C32086	R.A.	Mix	9.0 cm.	6.0 cm.	-3.0 cm.	66.66
M.Q. 40-62-81	N.	Mix	13.0 cm.	14.0 cm.	+1.0 cm.	107.14
R.O. 39-28-40	N.	Mix	4.0 cm.	4.0 cm.	0.0 cm.	100.00
B.G. C58046	N.	Mix	25.0 cm.	25.0 cm.	0.0 cm.	100.00
B.I. 40-21-82	N.	Mix	16.0 cm.	19.0 cm.	+3.0 cm.	118.75
J.H. C52073	N.	Mix	30.0 cm.	34.0 cm.	+4.0 cm.	113.33
M.B. 38-57-61	N.	Mix	20.0 cm.	15.0 cm.	-5.0 cm.	75.00
	TOTALS		265.0 cm.	267.0 cm.	+2.0 cm.	96.77 Average

Abbreviations

R.A. - Rheumatoid Arthritis
R.F. - Rheumatic Fever
N. - Nephrosis
C - Cortisone
M - Meticortin (prednisone)
Mix - Mixed

TABLE 2

Patients on Cortisone Therapy

Pt.	Dx.	Total Dose in mg.	Days	Average Daily Dose in mg.	Average per sq. Meter in mg.	Expected Growth in cm.	Actual Growth in cm.	Deviation in cm.	% of Expected Growth
C.H.	R.A.	33,710	806	41.8	46.4	21.5	22.0	+0.5	103.30
D.R.	R.F.	2,060	31	66.5	92.3	1.0	1.0	0.0	100.00
G.A.	R.F.	2,185	37	59.0	56.2	2.0	1.0	-1.0	50.00
C.C.	R.F.	3,160	42	75.3	75.3	3.0	4.0	+1.0	133.33
A.B.	R.F.	2,800	50	56.0	74.6	3.0	4.0	+1.0	133.33
M.H.	R.F.	1,350	25	54.0	45.0	3.0	3.0	0.0	100.00
J.C.	R.F.	12,550	218	57.5	63.9	16.0	17.0	+1.0	106.25
P.M.	R.F.	4,100	32	128.0	102.4	1.0	1.0	0.0	100.00
D.S.	R.A.	25,975	415	62.6	83.5	7.0	7.0	0.0	100.00
J.S.	R.F.	19,438	201	96.7	161.2	10.0	10.0	0.0	100.00
R.E.	R.F.	5,500	47	117.0	86.6	2.0	1.0	-1.0	50.00
W.Y.	R.F.	9,050	95	95.3	82.3	2.0	1.0	-1.0	50.00
	AVERAGES		166.6	75.8	80.8				93.85
	TOTALS					71.5	72.0	+0.5	

TABLE 3

ACTH Therapy

Pt.	Dx.	Total Dose in mg.	Days	Average Daily Dose in mg.	Average per sq. Meter in mg.	Expected Growth in cm.	Actual Growth in cm.	Deviation in cm.	% of Expected Growth
J.P.	R.F.	1,950	26	75.0	75.0	1.0	1.0	0.0	100.00

TABLE 4

Meticortin (prednisone) Therapy

Pt.	Dx.	Total Dose in mg.	Days	Average Daily Dose in mg.	Average per sq. Meter in mg.	Expected Growth in cm.	Actual Growth in cm.	Deviation in cm.	% of Expected Growth
K.O.	R.F.	2,337	116	20.0	21.7	3.5	5.0	+1.5	142.90

TABLE 5

Mixed Therapy

Pt.	Dx.	Therapy	Dates	Total Dose in mg.	Days	Average Daily Dose in mg.	Expected Growth in cm.	Actual Growth in cm.	Deviation in cm.	% of Expected Growth
M.P.	N.	ACTH	8-15-54 to 8-30-54	1,250	15	83.3	6.0	6.0	0.0	100.00
		C	9-30-54 to 2-14-55	10,575	145	73.0				
A.E.	N.	ACTH	9-22-52 to 10-1-52	1,000	10	100.0	16.0	18.0	+2.0	112.50
		C	10-6-52 to 12-13-53	5,550	130	42.7				
		ACTH	2-15-53 to 2-25-53	1,000	10	100.0				
		C	3-6-53 to 7-25-55	26,300	508	51.7				
		M	7-29-55 to 12-27-55	6,040	151	40.0				
A.S.	N.	ACTH	7-20-54 to 7-30-54	1,000	10	100.0	9.0	5.0	-4.0	55.60
		C	7-30-54 to 10-29-54	16,000	92	173.9				
		ACTH	11-10-54 to 12-16-54	3,600	36	100.0				
		C	12-17-54 to 2-14-56	62,999	408	155.4				
R.H.	N.	ACTH	7-25-53 to 8-4-53	1,000	10	100.0	16.0	18.0	+2.0	112.50
		C	8-8-53 to 11-18-53	4,350	102	42.6				
		ACTH	11-18-53 to 12-1-53	1,200	12	100.0				

TABLE 5 (Cont.)

Pt.	Dx.	Therapy	Dates	Total Dose in mg.	Days	Average Daily Dose in mg.	Expected Growth in cm.	Actual Growth in cm.	Deviation in cm.	% of Expected Growth
R.H. (cont.)		ACTH	1-12-54 to 1-22-54	1,000	10	100.0				
		C	1-27-54 to 2-26-54	1,000	10	100.0				
		ACTH	2-26-54 to 6-12-54	5,040	108	46.6				
		C	9-13-54 to 1-31-56	44,650	505	88.4				
F.A.	N.	H	7-28-54 to 6-7-55	30,660	313	98.0	8.0	8.0	0.0	100.00
		M	6-8-55 to 7-3-55	1,440	25	28.0				
		C	7-3-55 to 7-6-55	3,000	3	100.0				
		M	7-7-55 to 2-9-56	3,095	193	20.5				
L.J.	N.	ACTH	11-6-52 to 11-16-52	1,000	10	100.0	17.0	17.0	0.0	100.00
		C	11-18-52 to 4-1-54	29,100	528	55.1				
		H	4-1-54 to 1-24-55	15,480	299	51.8				
D.I.	R.A.	C	9-3-53 to 12-18-53	12,600	95	132.6	9.0	6.0	-3.0	66.66
		H	12-18-53 to 2-14-55	12,190	431	28.3				

TABLE 5 (Cont.)

Pt.	Dx.	Therapy	Dates	Total Dose in mg.	Days	Average Daily Dose in mg.	Expected Growth in cm.	Actual Growth in cm.	Deviation in cm.	% of Expected Growth
M.Q.	N.	ACTH	4-13-54 to 4-22-54	2,900	269	100.0	13.0	14.0	+1.0	107.14
		H	4-27-54 to 1-24-56	38,880	636	53.3				
R.O.	N.	ACTH	5-24-55 to 6-20-55	2,600	26	100.0	4.0	4.0	0.0	100.0
		M	7-1-55 to 2-21-56	4,040	222	18.2				
B.G.	N.	ACTH	6-12-51 to 6-24-51	1,200	12	100.0	25.0	25.0	0.0	100.0
		ACTH	11-10-51 to 11-27-51	1,700	17	100.0				
		ACTH	8-6-52 to 8-18-52	1,200	12	100.0				
		ACTH	4-10-53 to 4-20-53	1,000	10	100.0				
		C	4-23-52 to 4-22-53	15,600	364	42.9				
		ACTH	4-28-53 to 9-6-55	34,370	866	39.7				
		M	9-6-55 to 3-27-56	3,045	203	15.0				
B.I.	N.	ACTH	12-30-53 to 1-9-54	1,000	10	100.0	16.0	19.0	+3.0	118.75
		C	1-9-54 to 10-4-54	18,360	237	77.5				

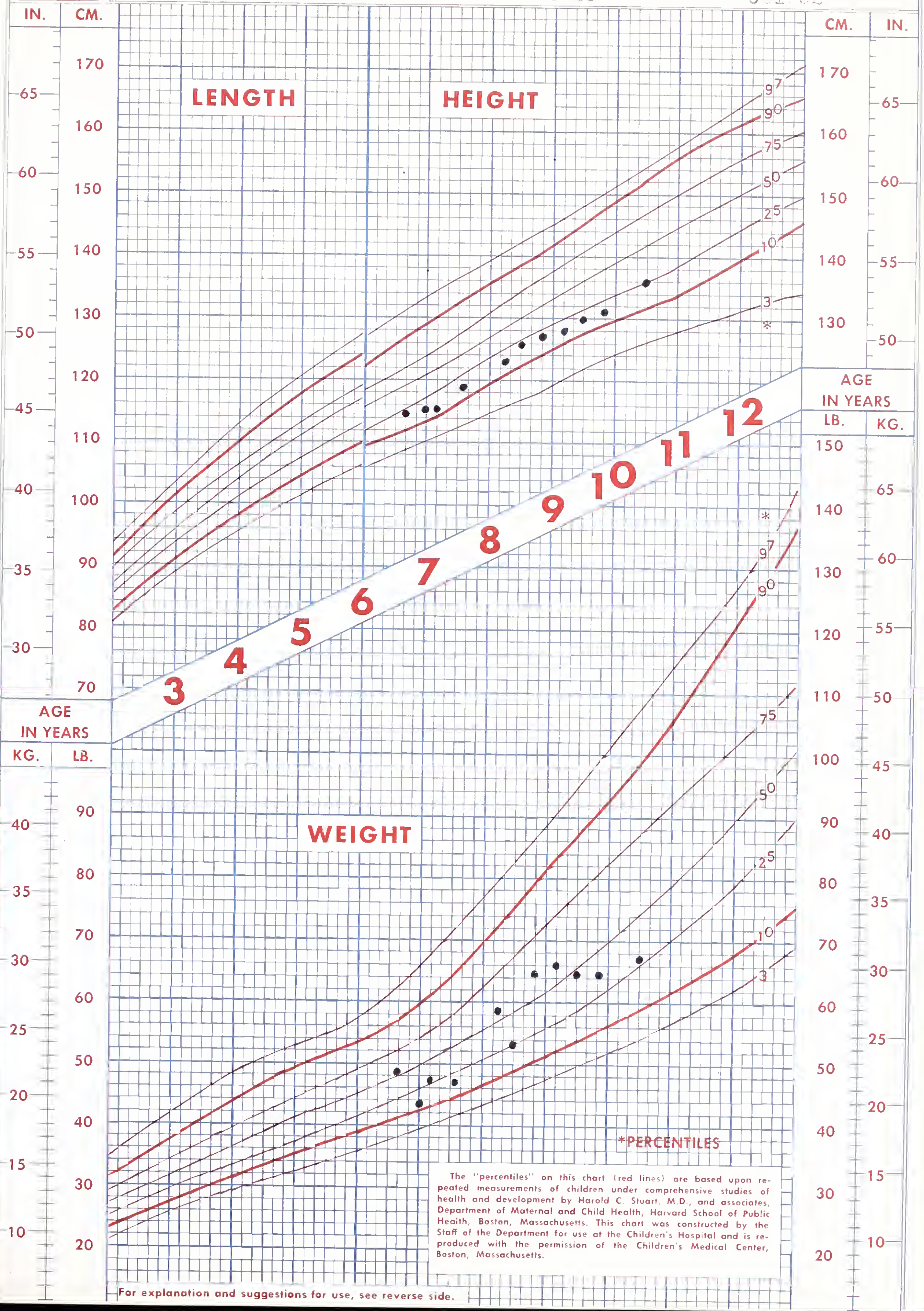
TABLE 5 (Cont.)

Pt.	Dx.	Therapy	Dates	Total Dose in mg.	Days	Average Daily Dose in mg.	Expected Growth in cm.	Actual Growth in cm.	Deviation in cm.	% of Expected Growth
B.I. (cont.)		H	10-4-54 to 2-3-56	31,800	487	62.3				
J.H.	N.	ACTH	1-18-51 to 2-12-51	2,500	25	100.0	30.0	34.0	+4.0	113.33
		C	2-13-52 to 10-2-52	8,555	233	38.3				
		ACTH	1-23-53 to 2-5-53	1,000	10	100.0				
		C	2-12-53 to 2-21-56	45,800	746	61.4				
M.B.	N.	ACTH	8-3-54 to 8-16-54	975	13	75.0	20.0	15.0	-5.0	75.00
		C	8-19-54 to 2-7-56	54,600	535	102.0				

TABLE 6

GIRLS

NAME Haleftrias, Catherine **BIRTH DATE** 4-4-45 **NO.** C61952



The "percentiles" on this chart (red lines) are based upon repeated measurements of children under comprehensive studies of health and development by Harold C. Stuart, M.D., and associates, Department of Maternal and Child Health, Harvard School of Public Health, Boston, Massachusetts. This chart was constructed by the Staff of the Department for use at the Children's Hospital and is reproduced with the permission of the Children's Medical Center, Boston, Massachusetts.

For explanation and suggestions for use, see reverse side.

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 304

PERCENTILE CHART FOR MEASUREMENTS OF GIRLS

THIS CHART provides for girls standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white girls of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

In line with common usage in the United States, the charts are ruled on a scale in pounds to represent weight. They are ruled, however, in centimeters to represent length under 6 years and height thereafter, because this scale facilitates accuracy in measuring and recording and centimeter rules and tapes are readily available. For the convenience of those preferring them, scales for kilograms and inches are placed outside of the principal scales and paralleling them. Therefore, if weights are taken in kilograms and lengths and heights in inches, they may be plotted directly without conversion by placing a ruler at the appropriate points on the outer scales of the chart.

To determine the percentile position of any measurement at a given age, the vertical age line is located and a dot is placed where this intersects the horizontal line representing the value obtained from the measurement. Vertical lines give age by 2-month intervals and horizontal lines by 2-pound and 2-cm. intervals. This permits by interpolation accurate placement for age to ½ month and for measurements to ½ pound or 0.5 cm. Recognition of the position held by a child within or outside of the range in respect to each measurement recorded calls attention to the relative size and build of the individual at the time. More importantly, comparisons of percentile positions held by these measurements at repeated periodic examinations indicate adherence to or possibly significant deviation from previous percentile positions. Under normal circumstances, one expects a child to maintain a similar position from age to age — that is, on or near one percentile line or between the same two lines. Occasionally encountered sharp deviations or more gradual but continuing shifts from one percentile position to another call for further investigation as to their causes. In all cases, readings of measurements should be checked and care should be taken to secure the same position of the child accurately at all examinations. The following procedures were used in obtaining these norms and therefore are recommended:

Body Weight — The child is weighed without clothing except light undergarments.

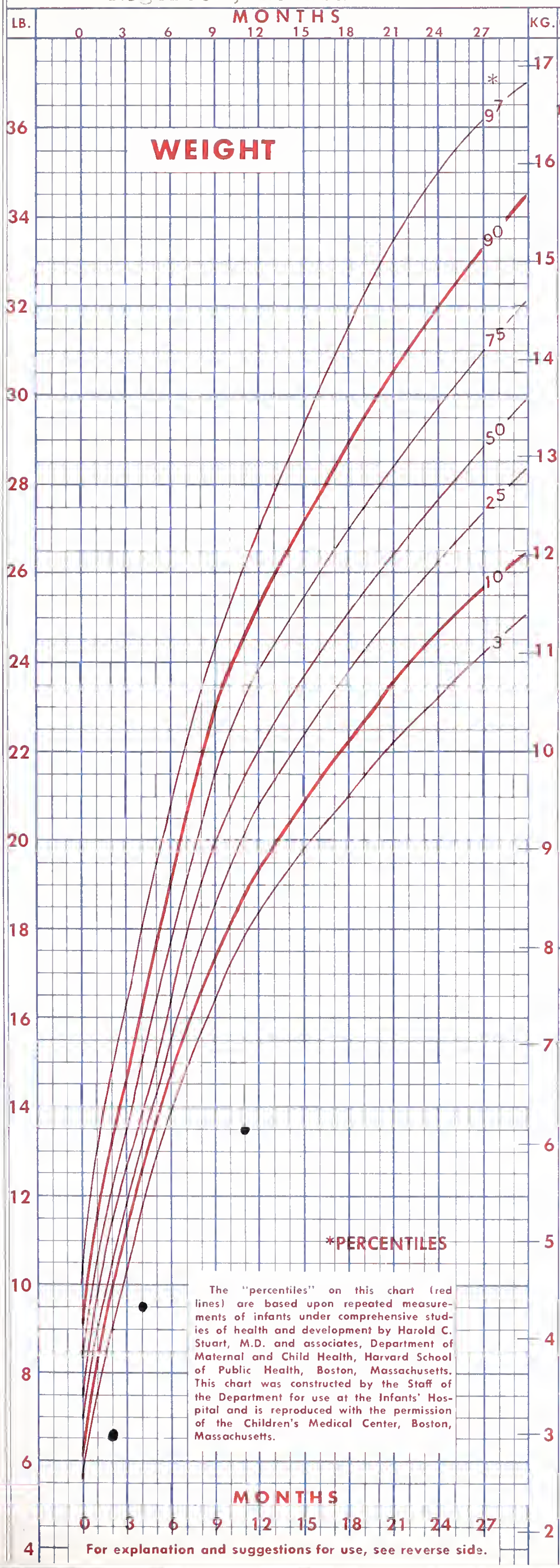
Recumbent Length — The child lies relaxed on a firm surface parallel to a centimeter rule. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. The head is held so that the eyes face the ceiling.

Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

INFANT BOYS

NAME Rogerson, Ronald BIRTH DATE 2-19-48 NO. C10014

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



The "percentiles" on this chart (red lines) are based upon repeated measurements of infants under comprehensive studies of health and development by Harold C. Stuart, M.D. and associates, Department of Maternal and Child Health, Harvard School of Public Health, Boston, Massachusetts. This chart was constructed by the Staff of the Department for use at the Infants' Hospital and is reproduced with the permission of the Children's Medical Center, Boston, Massachusetts.

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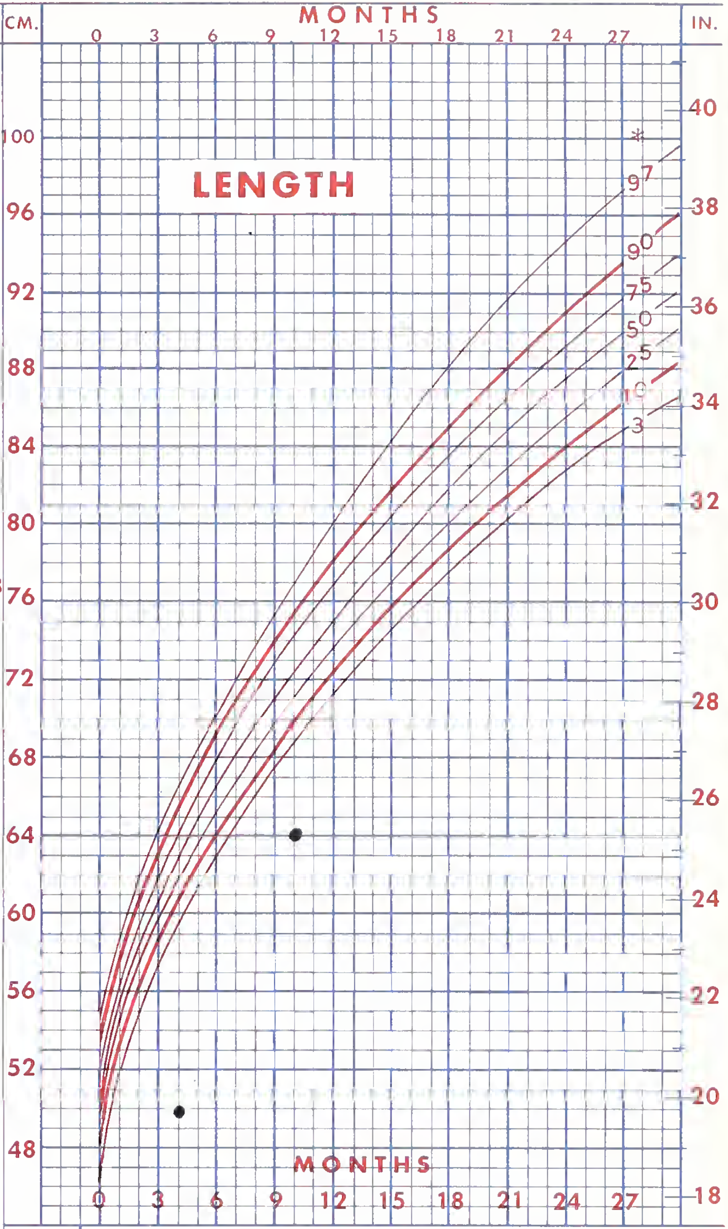
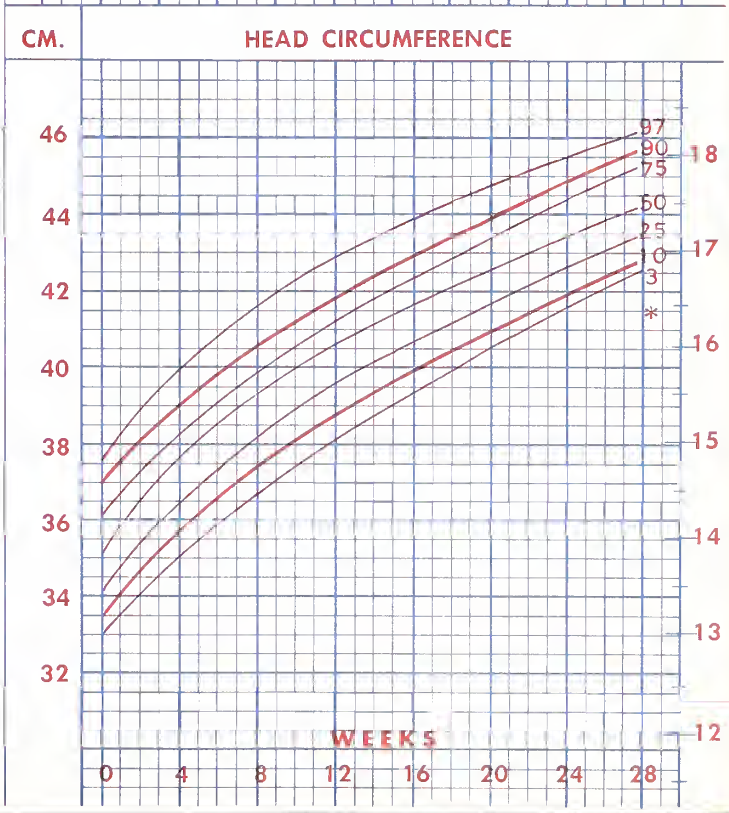




FORM 303

PERCENTILE CHART FOR MEASUREMENTS OF INFANT BOYS

THIS CHART provides for infant boys standards of reference for body weight and recumbent length by month from birth to 28 months and for head circumference by week from birth to 28 weeks. It is based upon repeated measurements at selected ages of a group of more than 100 white infants of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from the infants at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 infants. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 infants of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 infants might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are presented in heavy lines to show the limits within which most infants remain. The lighter lines in the graphs divide the distributions into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

In line with common usage in the United States, the charts are ruled on a scale in pounds to represent weight. They are ruled, however, in centimeters to represent length and head circumference, because this scale facilitates accuracy in measuring and recording and centimeter rules and tapes are readily available. For the convenience of those preferring them, scales for kilograms and inches are placed outside of the principal scales and paralleling them. Therefore, if weights are taken in kilograms and lengths and head circumferences in inches, they may be plotted directly without conversion by placing a ruler at the appropriate points on the outer scales of the charts.

To determine the percentile position of any measurement at a given age, the vertical age line is located and a dot is placed where this intersects the horizontal line representing the value obtained from the measurement. Vertical lines give age by one-month intervals for weight and length and one-week intervals for head circumference; horizontal lines give ½-pound, 1-cm. and 0.5-cm. intervals respectively. This permits by interpolation accurate placement for age to weeks, for weights to 2 ounces and for centimeters to 0.5 cm. Recognition of the position within or outside of the range held by an infant in respect to each measurement recorded calls attention to the relative size and build of the individual at the time. More importantly, comparisons of percentile positions held by these measurements at repeated periodic examinations indicate adherence to or possibly significant deviation from previous percentile positions. Under normal circumstances, one expects an infant to maintain a similar position from age to age — that is, on or near one percentile line or between the same two lines. Occasional sharp deviations or gradual but continuing shifts from one percentile position to another call for further investigation as to their causes. In all cases, readings of measurements should be checked and care should be taken to secure the same position of the infant at all examinations. The following procedures were used in obtaining these norms and therefore are recommended:

Body Weight — The infant is weighed without clothing, preferably on special infant scales.

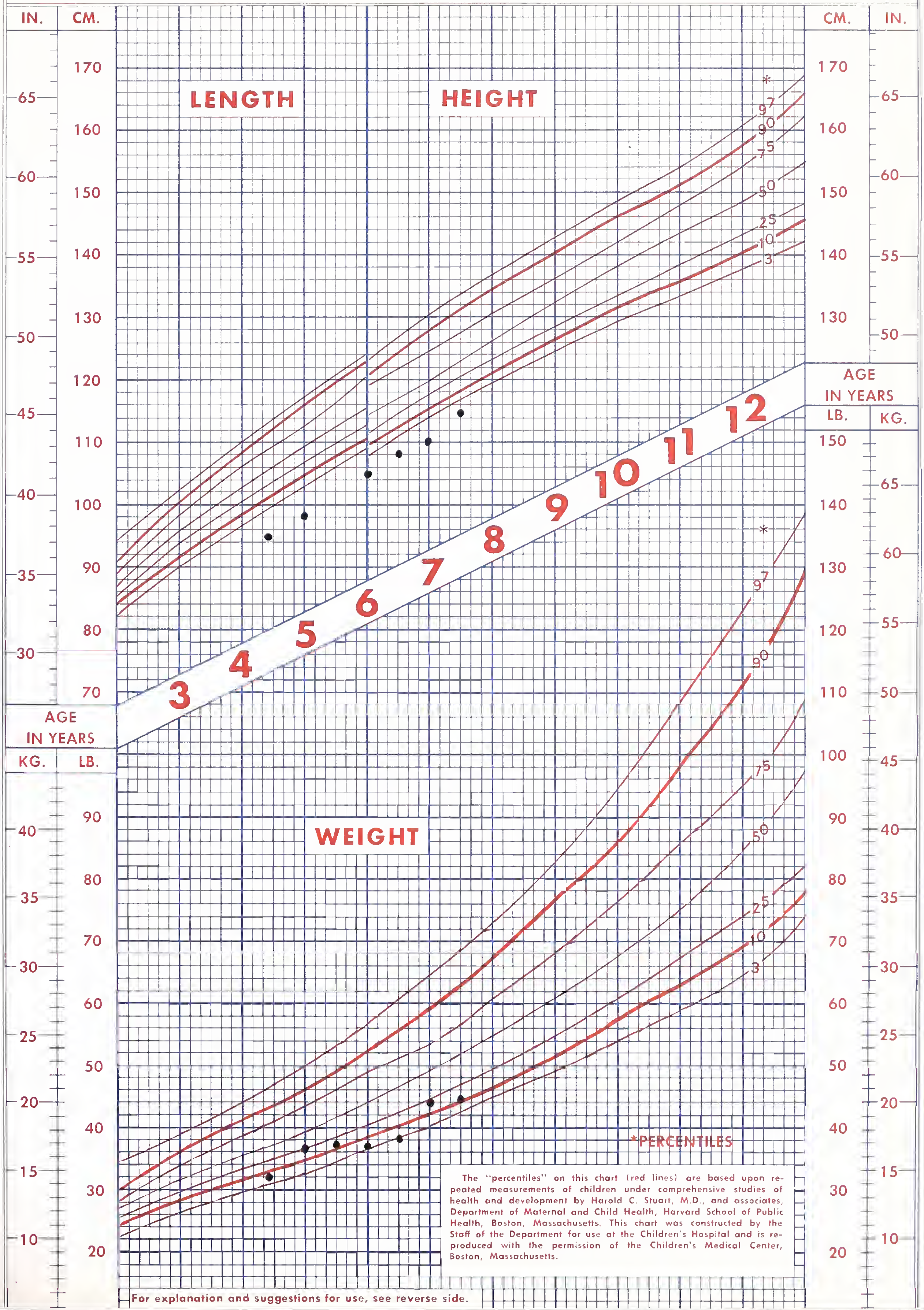
Recumbent Length — The infant lies relaxed on a firm surface parallel to a centimeter rule or on a special infant measuring board which permits the following procedure. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. Care must be taken to secure extension at the knees, and the head should be held so that the eyes face the ceiling.

Head Circumference — This measurement is more satisfactory if taken with the infant lying on his back. The tape is passed around the head from above and placed anteriorly over the lower forehead just above the supraorbital ridges. With the position of the tape thus fixed anteriorly, the largest circumference is obtained by passing it posteriorly over the most prominent part of the occiput.

BOYS

NAME Rogerson, Ronald **BIRTH DATE** 2-12-48 **NO.** C10014

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

THIS CHART provides for boys standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white boys of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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To determine the percentile position of any measurement at a given age, the vertical age line is located and a dot is placed where this intersects the horizontal line representing the value obtained from the measurement. Vertical lines give age by 2-month intervals and horizontal lines by 2-pound and 2-cm. intervals. This permits by interpolation accurate placement for age to ½ month and for measurements to ½ pound or 0.5 cm. Recognition of the position held by a child within or outside of the range in respect to each measurement recorded calls attention to the relative size and build of the individual at the time. More importantly, comparisons of percentile positions held by these measurements at repeated periodic examinations indicate adherence to or possibly significant deviation from previous percentile positions. Under normal circumstances, one expects a child to maintain a similar position from age to age — that is, on or near one percentile line or between the same two lines. Occasionally encountered sharp deviations or more gradual but continuing shifts from one percentile position to another call for further investigation as to their causes. In all cases, readings of measurements should be checked and care should be taken to secure the same position of the child accurately at all examinations. The following procedures were used in obtaining these norms and therefore are recommended:

Body Weight — The child is weighed without clothing except light undergarments.

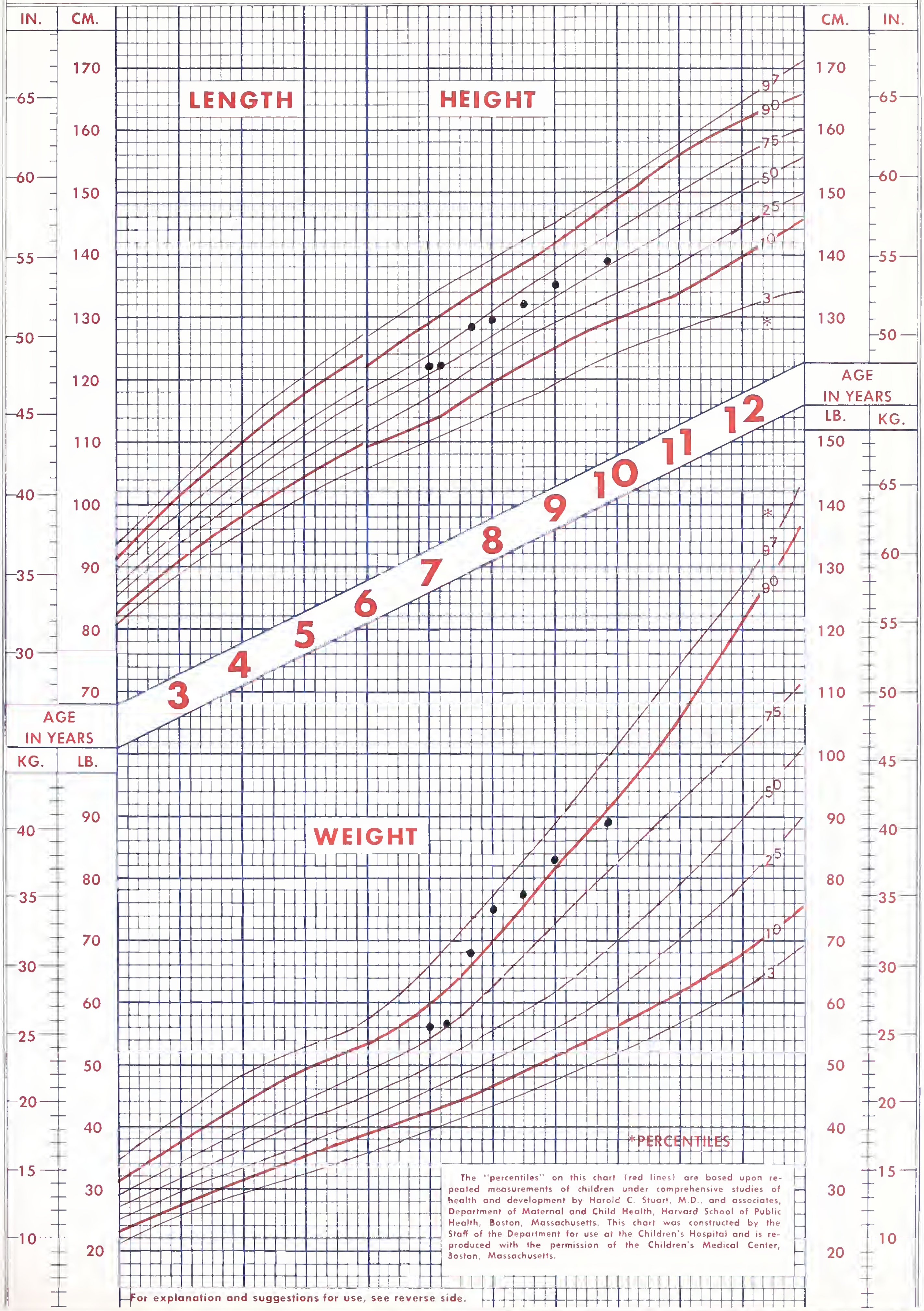
Recumbent Length — The child lies relaxed on a firm surface parallel to a centimeter rule. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. The head is held so that the eyes face the ceiling.

Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

GIRLS

NAME Antonucci, Grace **BIRTH DATE** 10-13-45 **NO.** 57-83-83

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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FORM 304

PERCENTILE CHART FOR MEASUREMENTS OF GIRLS

THIS CHART provides for girls standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white girls of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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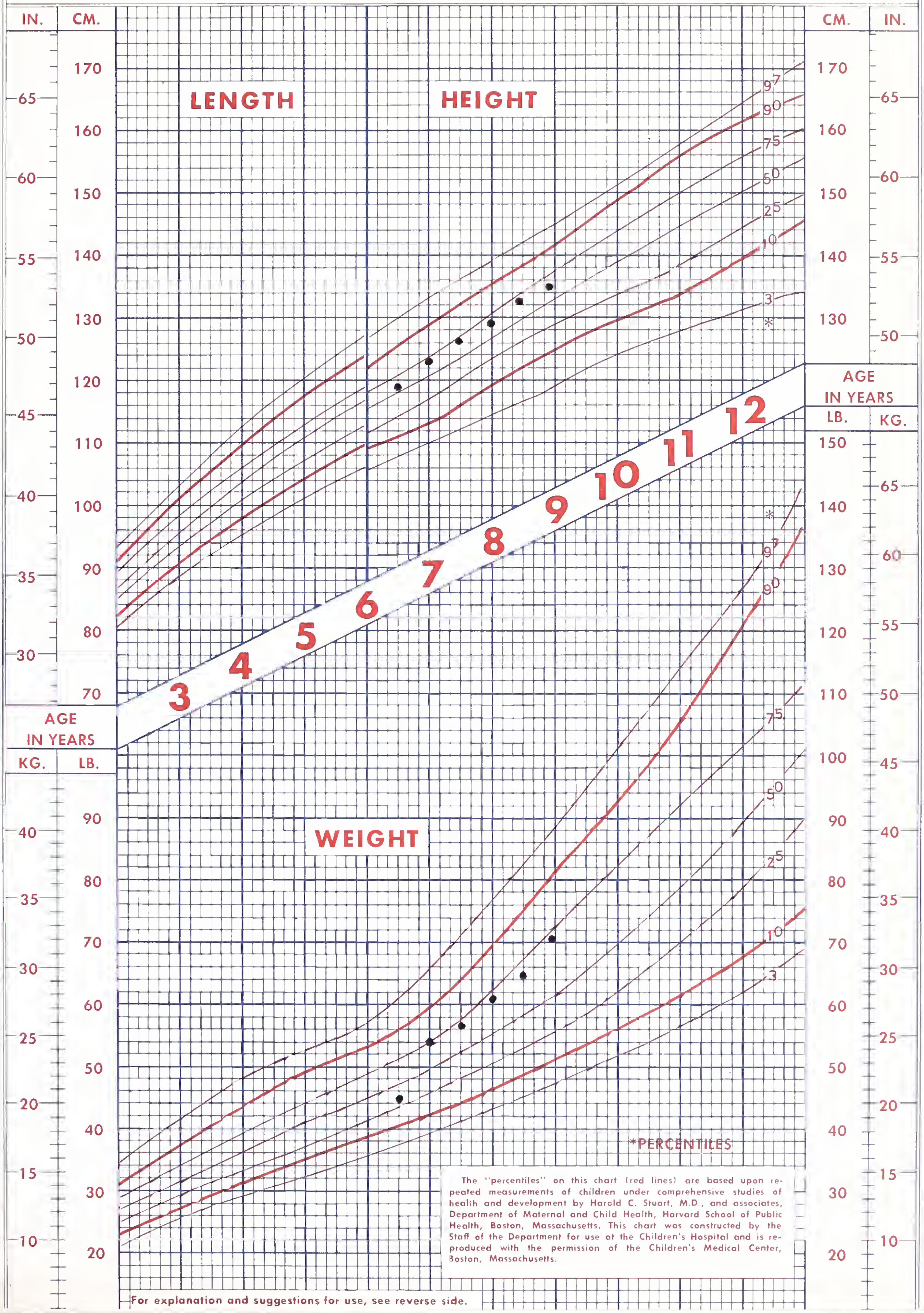
Body Weight — The child is weighed without clothing except light undergarments.

Recumbent Length — The child lies relaxed on a firm surface parallel to a centimeter rule. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. The head is held so that the eyes face the ceiling.

Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

GIRLS

NAME Ceravone, Carol **BIRTH DATE** 2-1-46 **NO.** B76663



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THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 304

PERCENTILE CHART FOR MEASUREMENTS OF GIRLS

THIS CHART provides for girls standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white girls of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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Body Weight — The child is weighed without clothing except light undergarments.

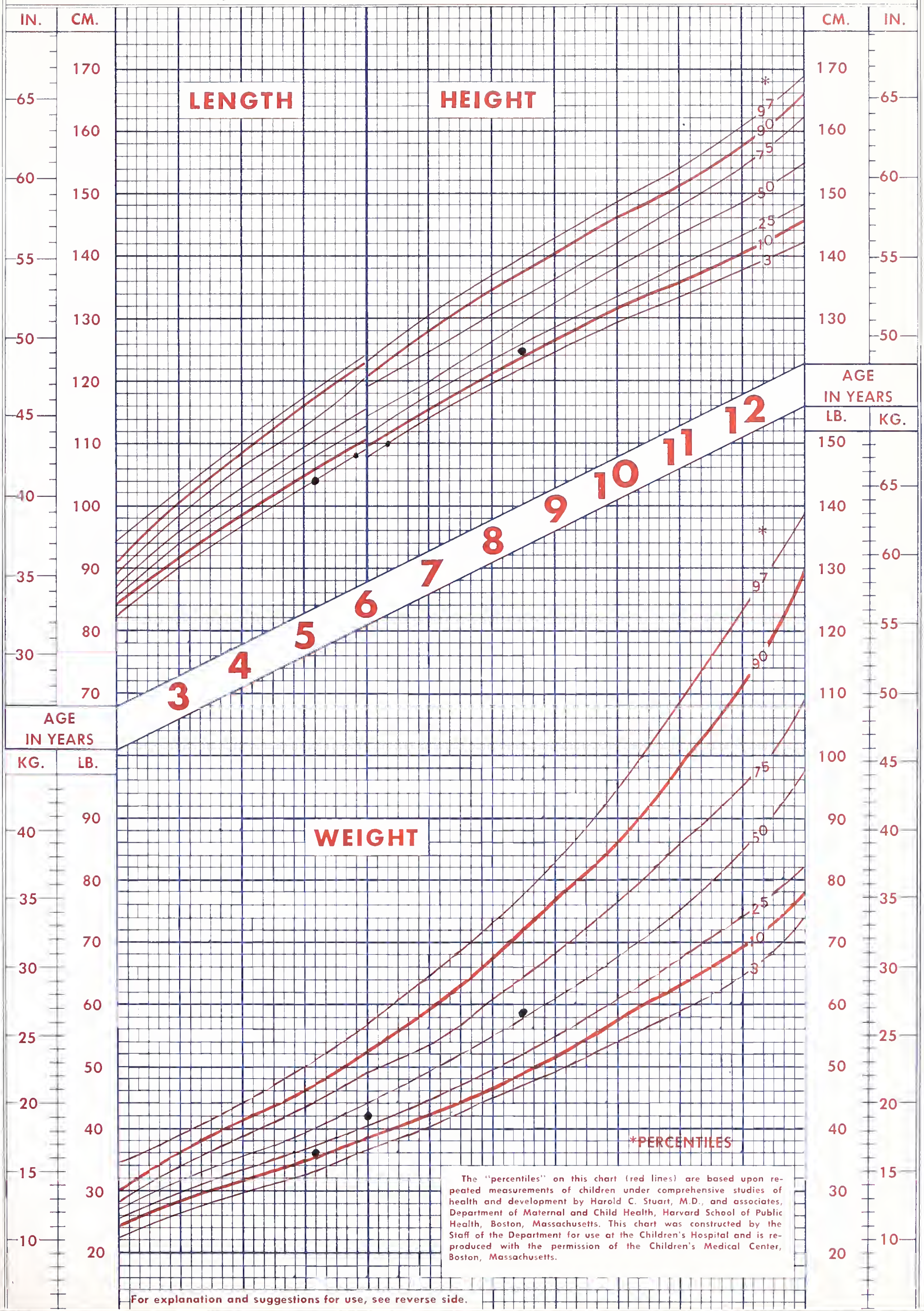
Recumbent Length — The child lies relaxed on a firm surface parallel to a centimeter rule. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. The head is held so that the eyes face the ceiling.

Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

BOYS

NAME Bartolucci, Alan BIRTH DATE 4-24-44 NO. C22347

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

THIS CHART provides for boys standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white boys of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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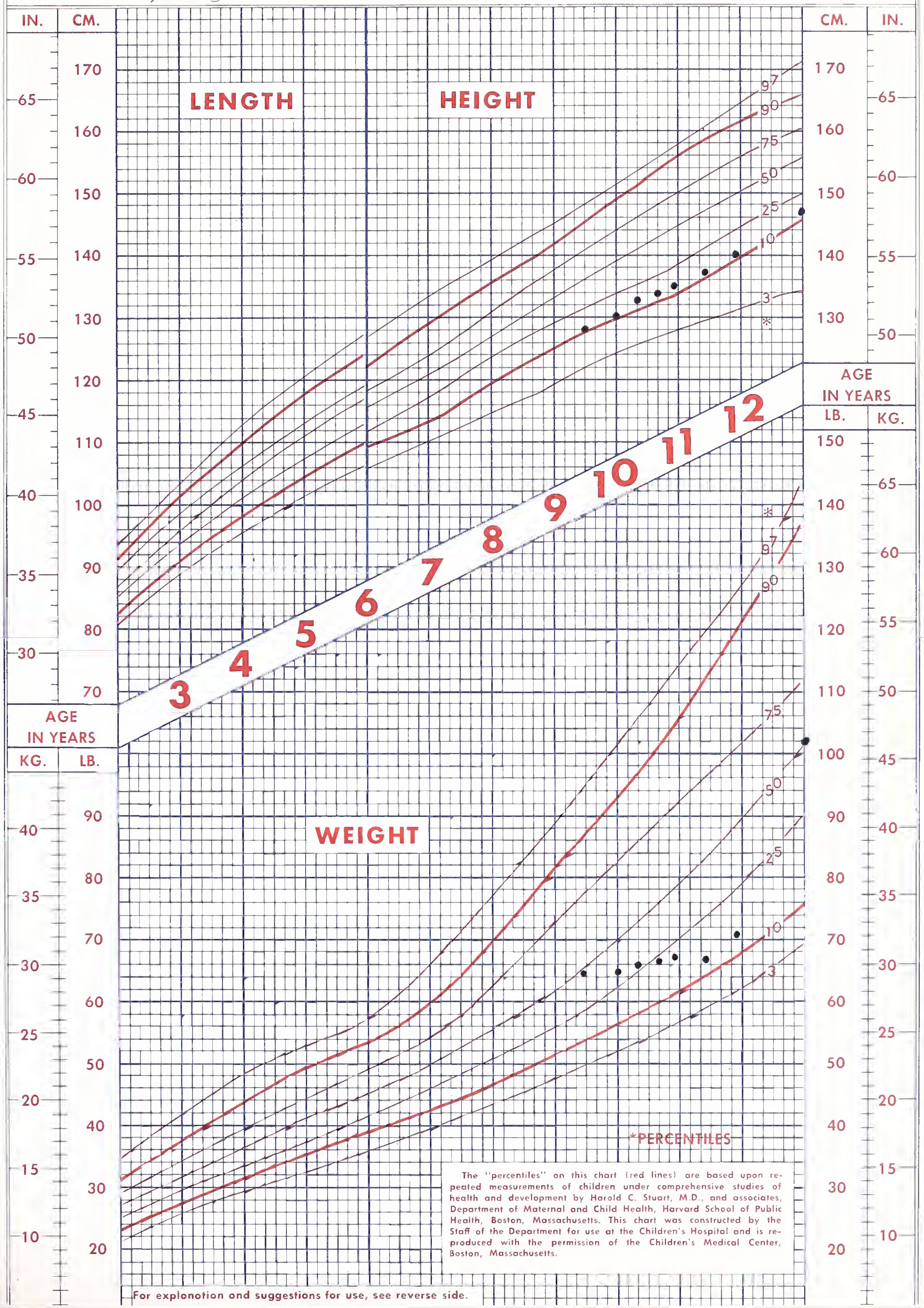
Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

GIRLS

NAME Hall, Margaret **BIRTH DATE** 10-23-39 **NO.** C18985



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THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 304

PERCENTILE CHART FOR MEASUREMENTS OF GIRLS

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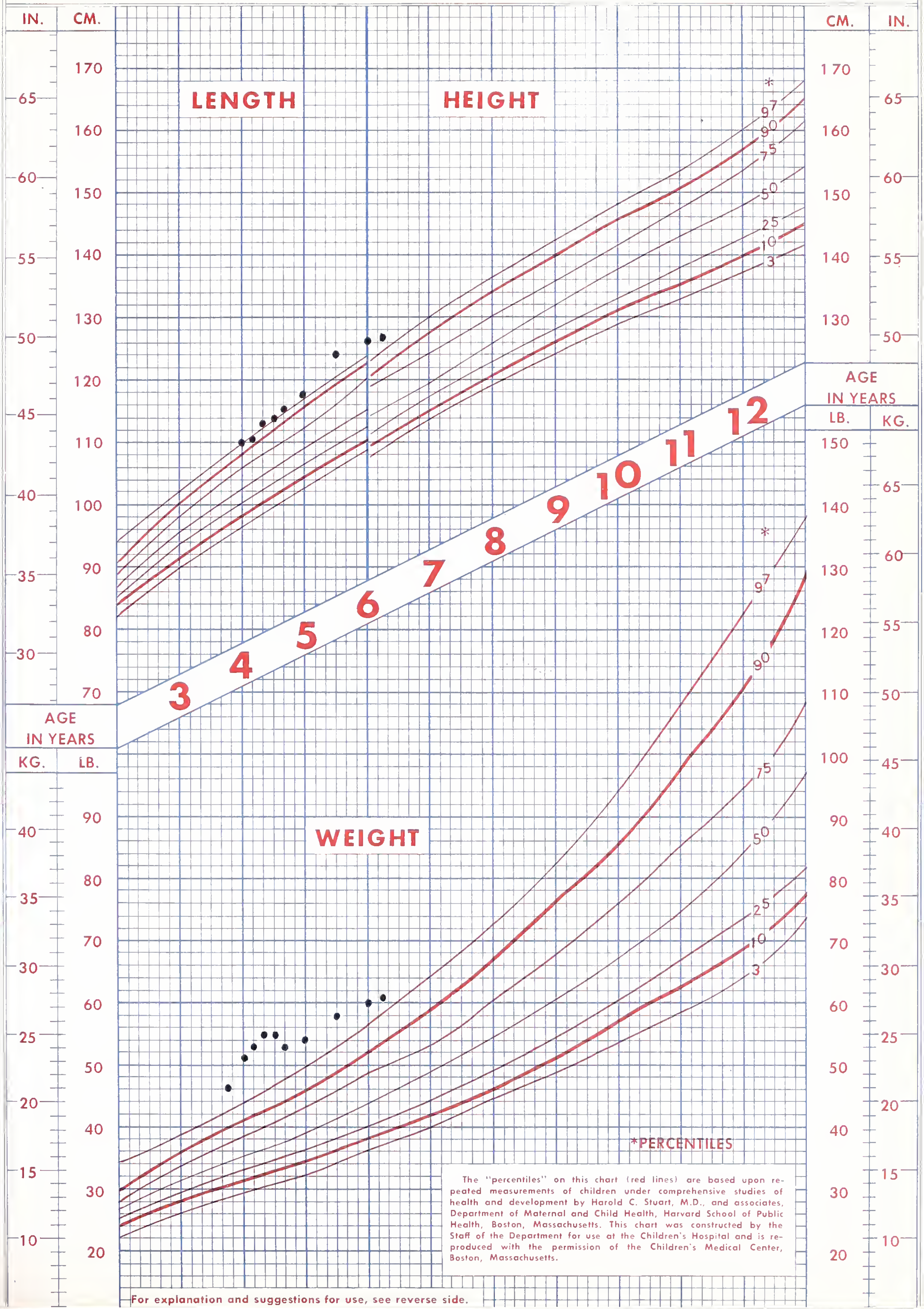
BOYS

NAME Collins, John **BIRTH DATE** 6-27-49 **NO.** 027067



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THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

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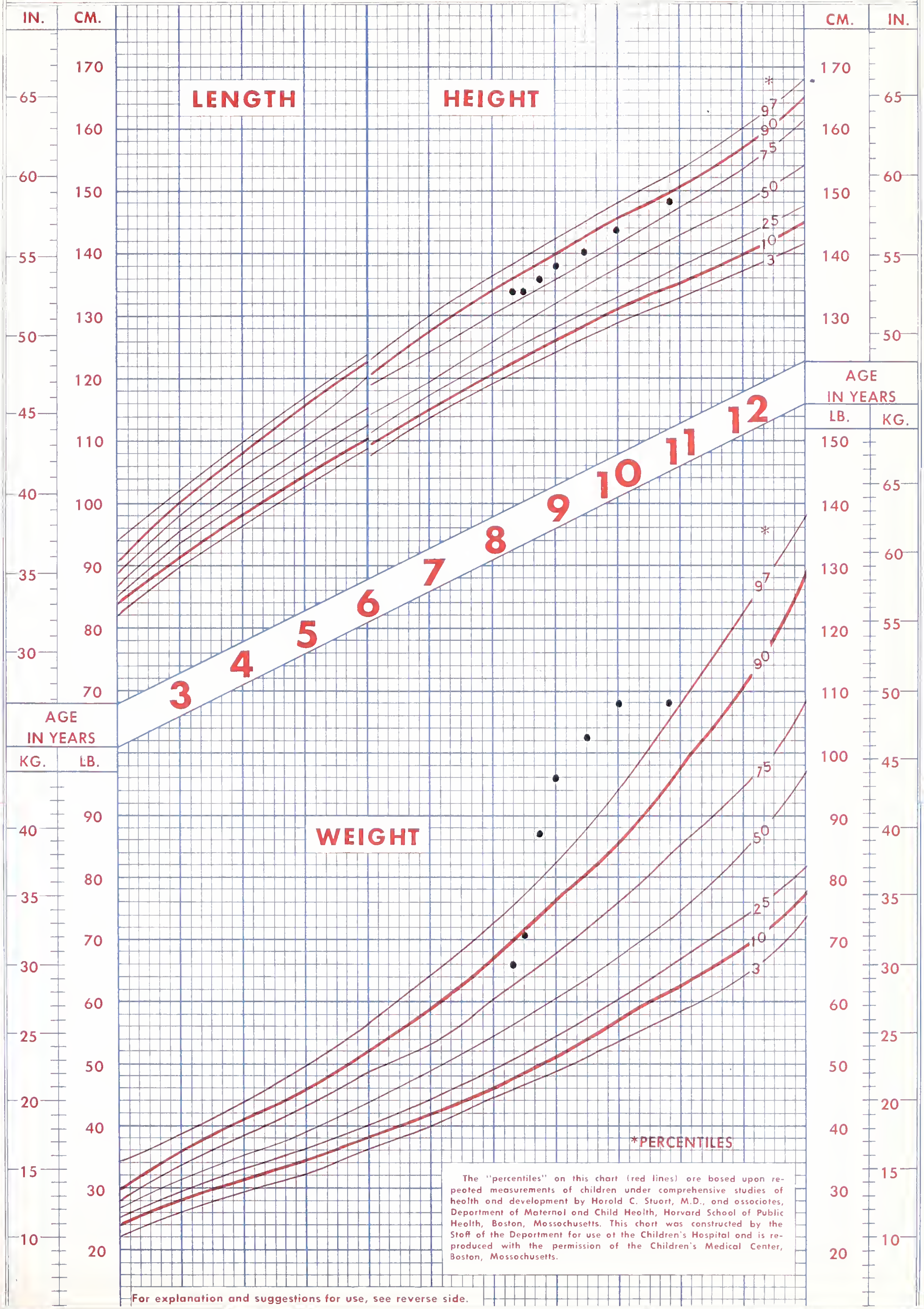
BOYS

NAME Murray, Patrick **BIRTH DATE** 2-11-45 **NO.** 38-[illegible]6-86



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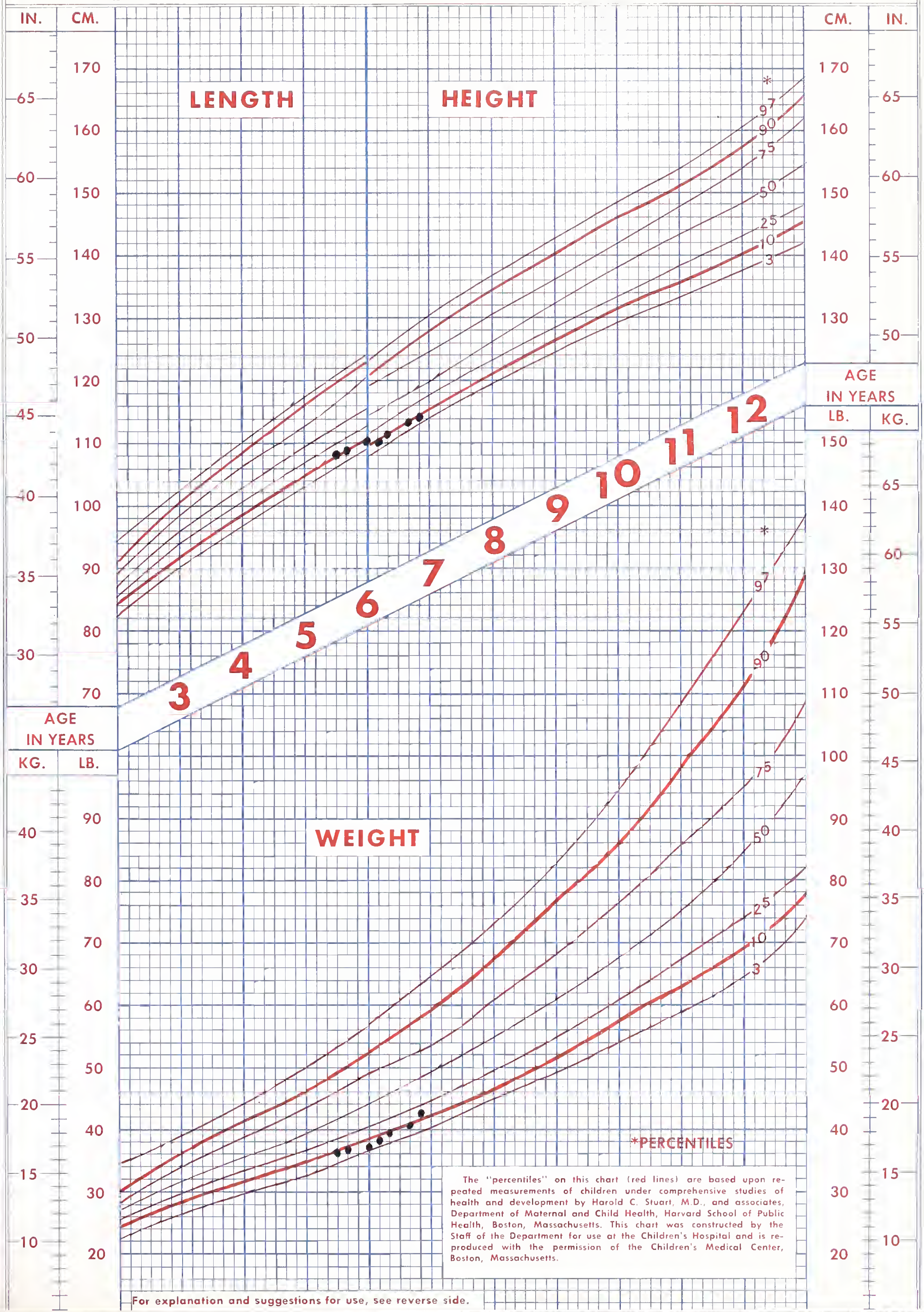
BOYS

NAME Super, David   BIRTH DATE 4-11-49   NO. 41-71-26



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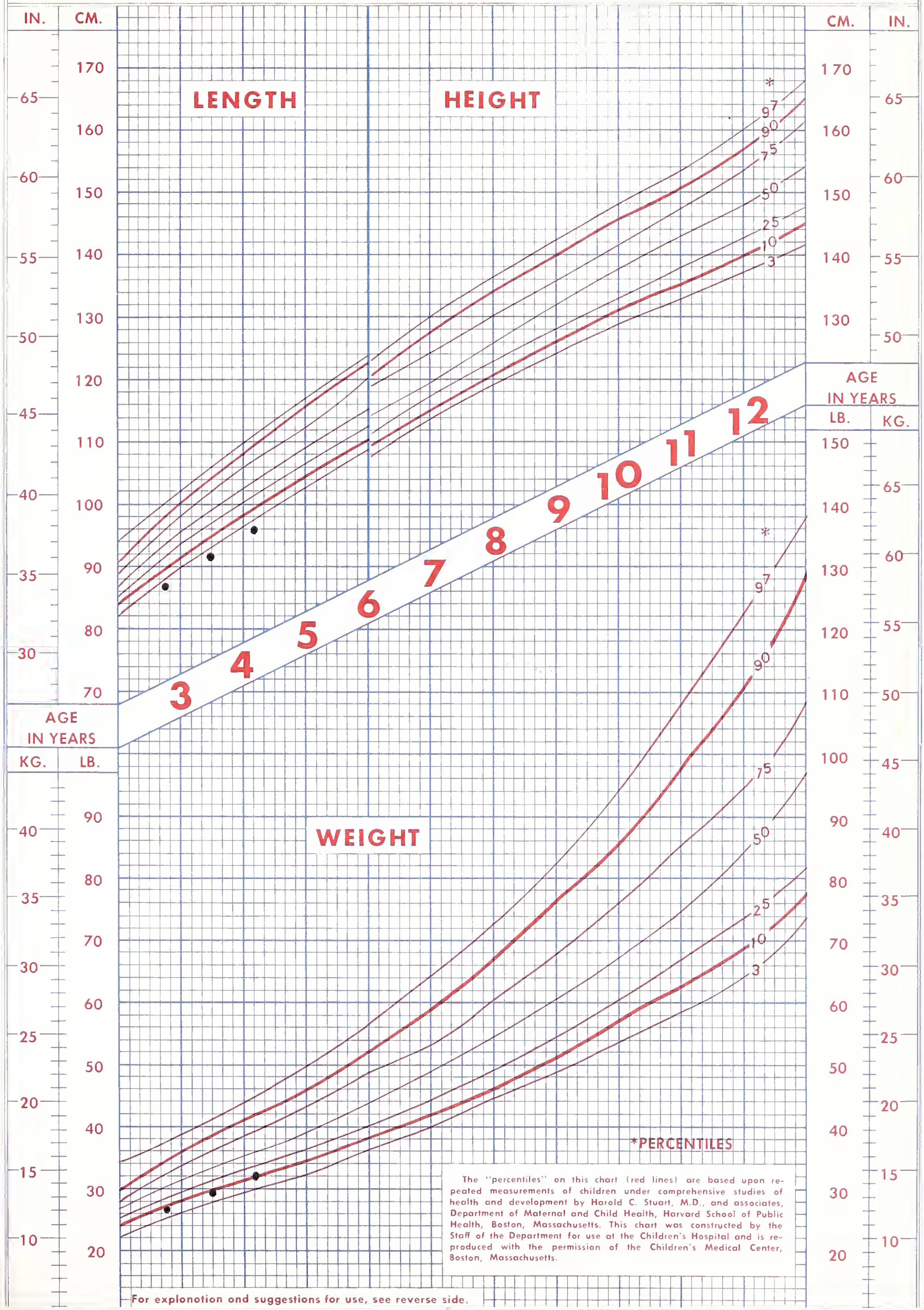
BOYS

NAME Siligato, James **BIRTH DATE** 1-10-52 **NO.** 42-86-12

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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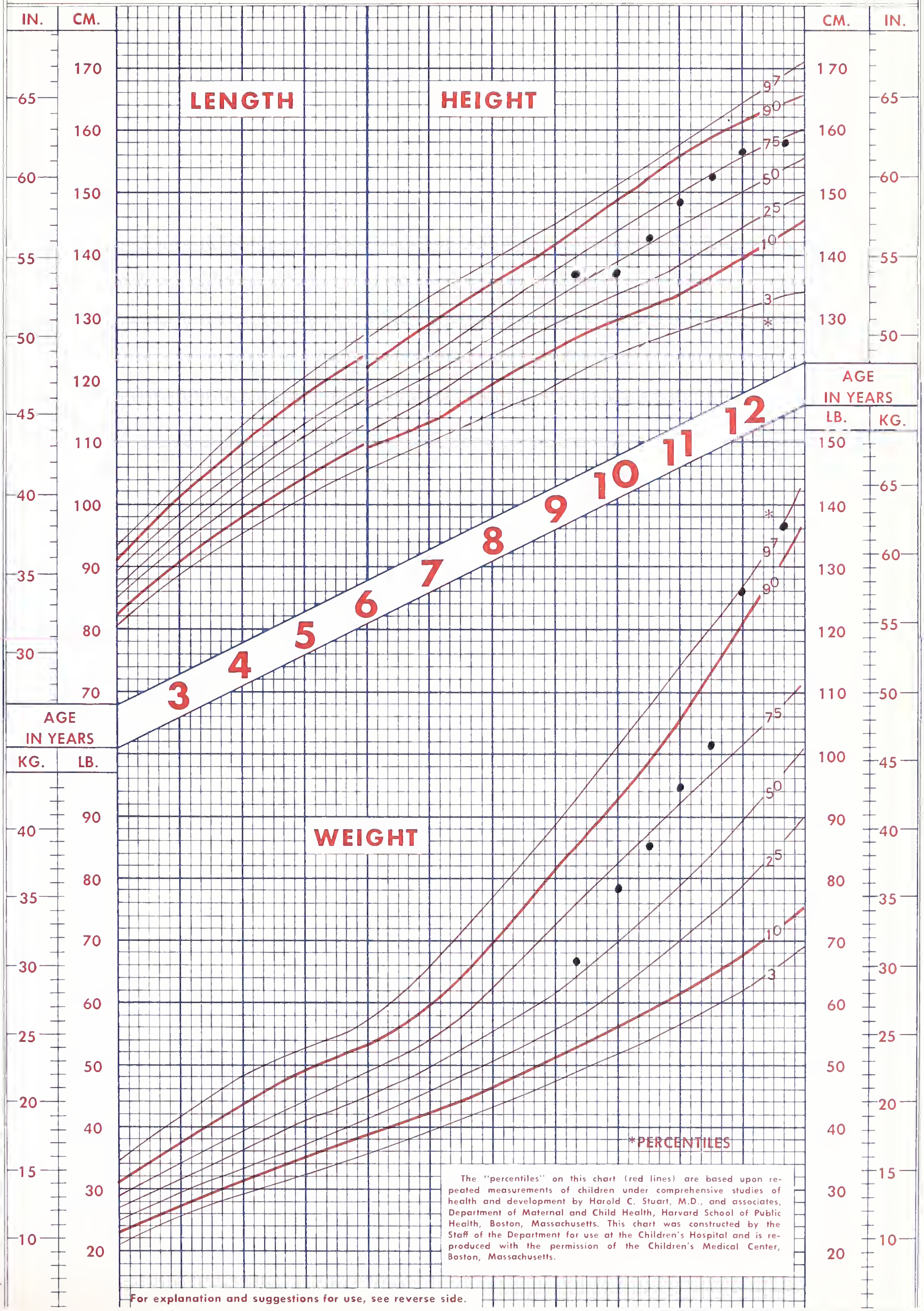
GIRLS

NAME Lacey, Rose **BIRTH DATE** 10-22-39 **NO.** B373



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THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 304

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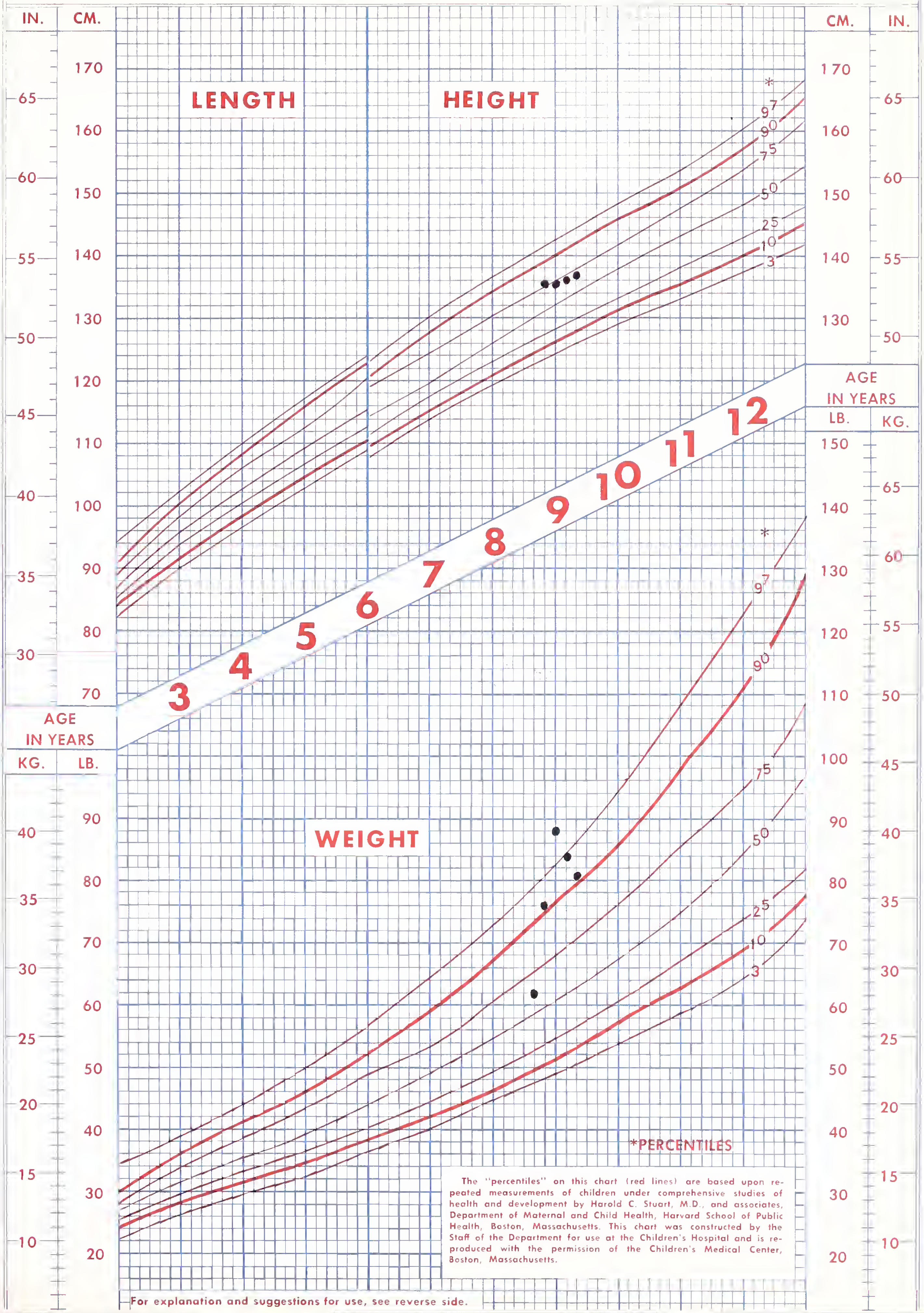
BOYS

NAME Yurgilevich, William **BIRTH DATE** 10-14-46 **NO.** 42-84-41



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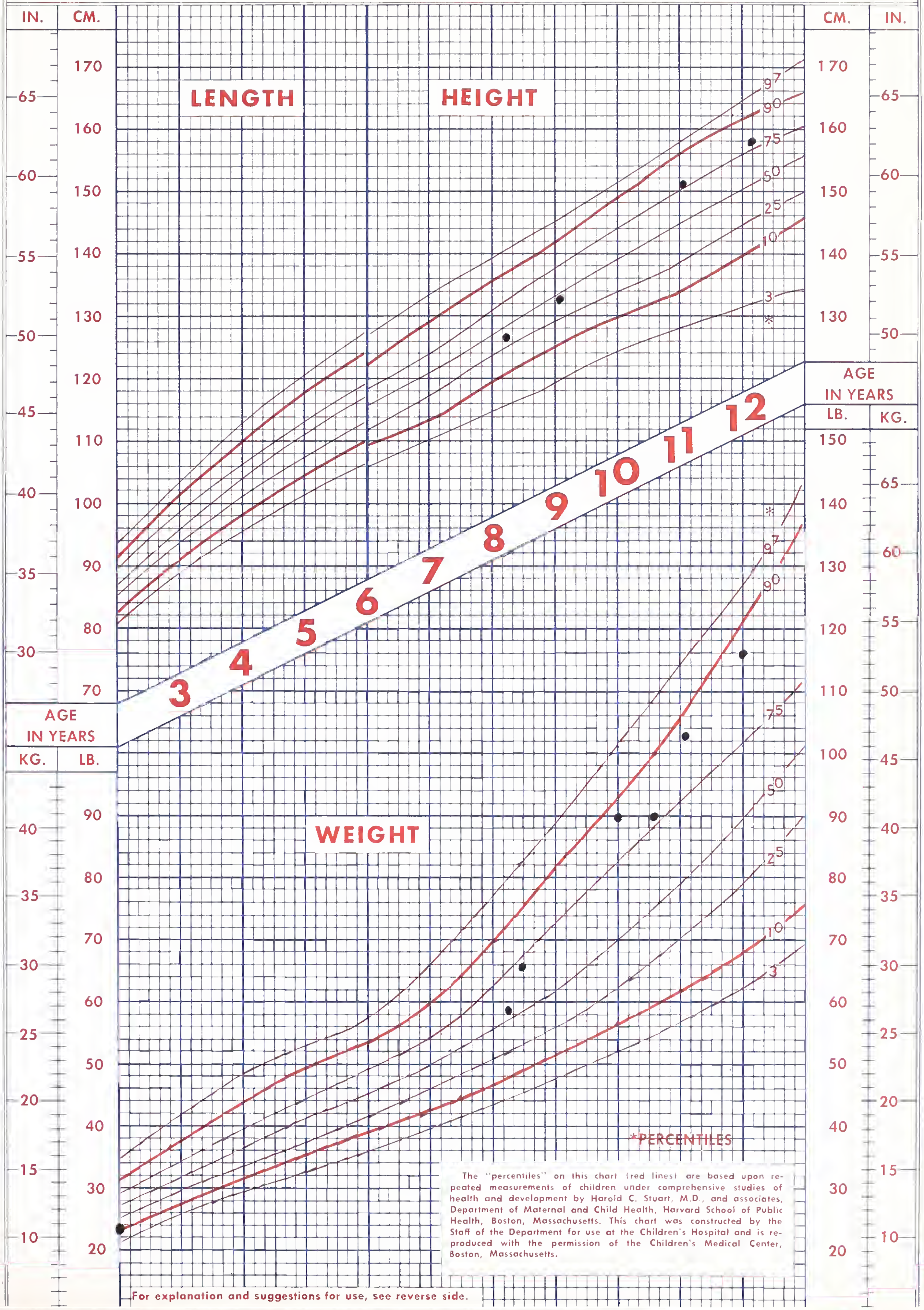
GIRLS

NAME Pardon, Jo Ann **BIRTH DATE** 1-20-42 **NO.** C40827

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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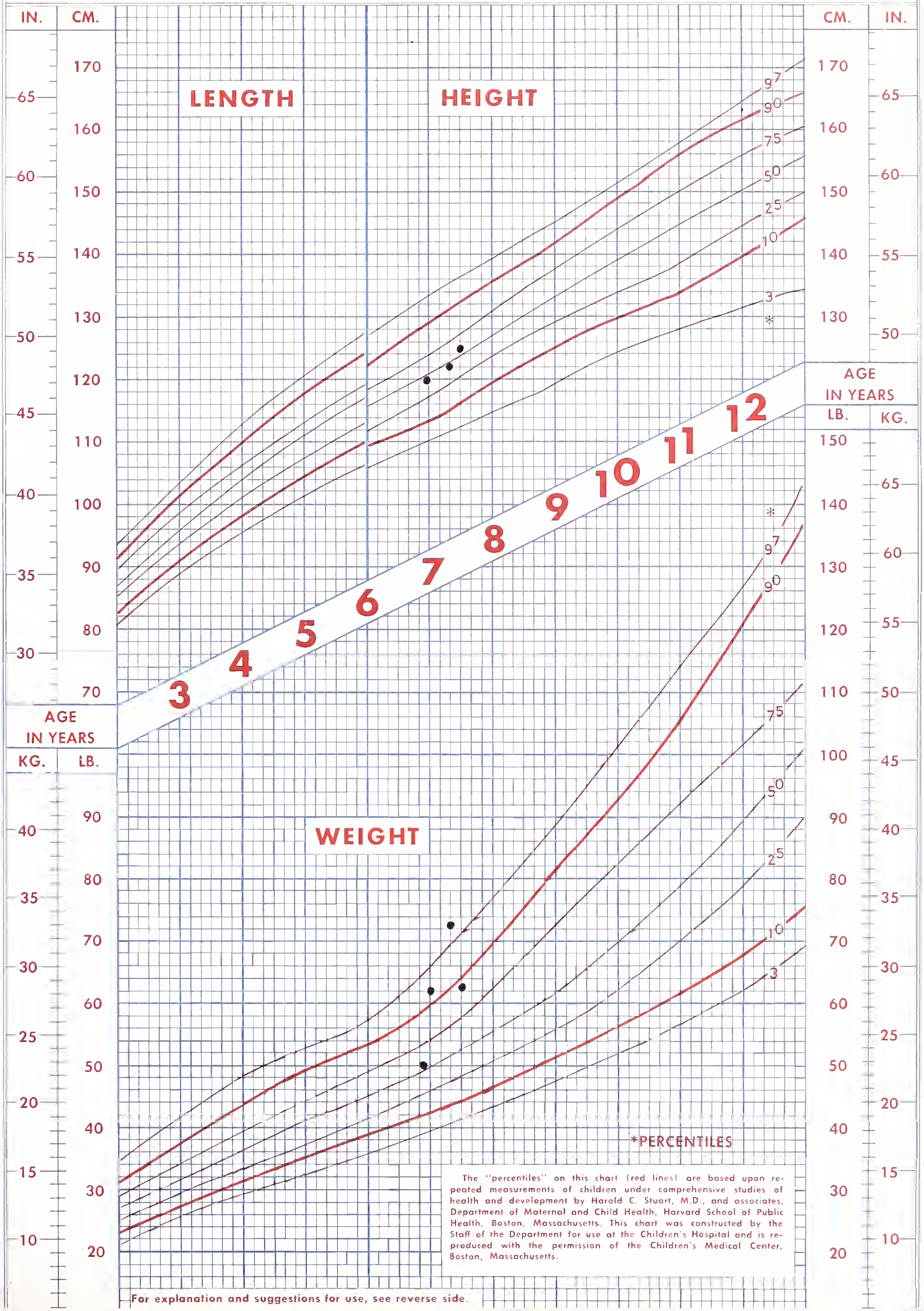
GIRLS

NAME O'Brien, Karen **BIRTH DATE** 8-17-48 **NO.** 43-11-71

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



The "percentiles" on this chart (red lines) are based upon repeated measurements of children under comprehensive studies of health and development by Harold C. Stuart, M.D., and associates, Department of Maternal and Child Health, Harvard School of Public Health, Boston, Massachusetts. This chart was constructed by the Staff of the Department for use at the Children's Hospital and is reproduced with the permission of the Children's Medical Center, Boston, Massachusetts.

For explanation and suggestions for use, see reverse side.

FORM 304

PERCENTILE CHART FOR MEASUREMENTS OF GIRLS

THIS CHART provides for girls standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white girls of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

In line with common usage in the United States, the charts are ruled on a scale in pounds to represent weight. They are ruled, however, in centimeters to represent length under 6 years and height thereafter, because this scale facilitates accuracy in measuring and recording and centimeter rules and tapes are readily available. For the convenience of those preferring them, scales for kilograms and inches are placed outside of the principal scales and paralleling them. Therefore, if weights are taken in kilograms and lengths and heights in inches, they may be plotted directly without conversion by placing a ruler at the appropriate points on the outer scales of the chart.

To determine the percentile position of any measurement at a given age, the vertical age line is located and a dot is placed where this intersects the horizontal line representing the value obtained from the measurement. Vertical lines give age by 2-month intervals and horizontal lines by 2-pound and 2-cm. intervals. This permits by interpolation accurate placement for age to ½ month and for measurements to ½ pound or 0.5 cm. Recognition of the position held by a child within or outside of the range in respect to each measurement recorded calls attention to the relative size and build of the individual at the time. More importantly, comparisons of percentile positions held by these measurements at repeated periodic examinations indicate adherence to or possibly significant deviation from previous percentile positions. Under normal circumstances, one expects a child to maintain a similar position from age to age — that is, on or near one percentile line or between the same two lines. Occasionally encountered sharp deviations or more gradual but continuing shifts from one percentile position to another call for further investigation as to their causes. In all cases, readings of measurements should be checked and care should be taken to secure the same position of the child accurately at all examinations. The following procedures were used in obtaining these norms and therefore are recommended:

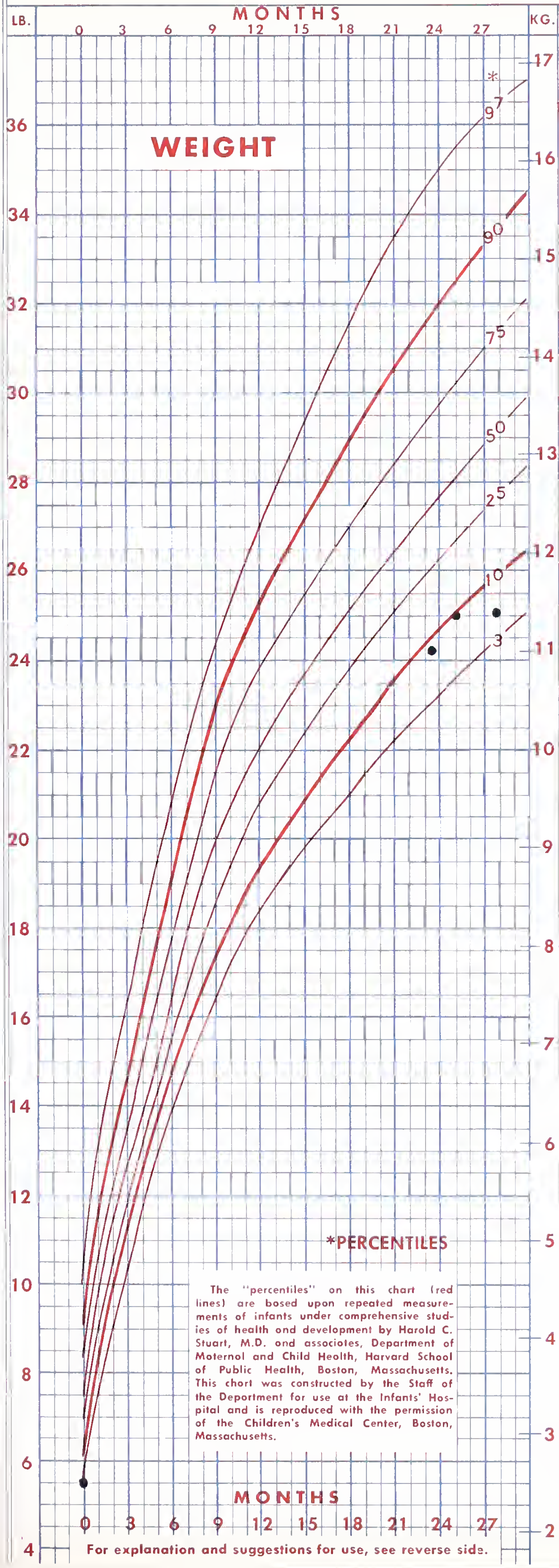
Body Weight — The child is weighed without clothing except light undergarments.

Recumbent Length — The child lies relaxed on a firm surface parallel to a centimeter rule. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. The head is held so that the eyes face the ceiling.

Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

INFANT BOYS

NAME Patton, Micheal BIRTH DATE 9-28-52 NO. 41-36-50



*PERCENTILES

The "percentiles" on this chart (red lines) are based upon repeated measurements of infants under comprehensive studies of health and development by Harold C. Stuart, M.D. and associates, Department of Maternal and Child Health, Harvard School of Public Health, Boston, Massachusetts. This chart was constructed by the Staff of the Department for use at the Infants' Hospital and is reproduced with the permission of the Children's Medical Center, Boston, Massachusetts.

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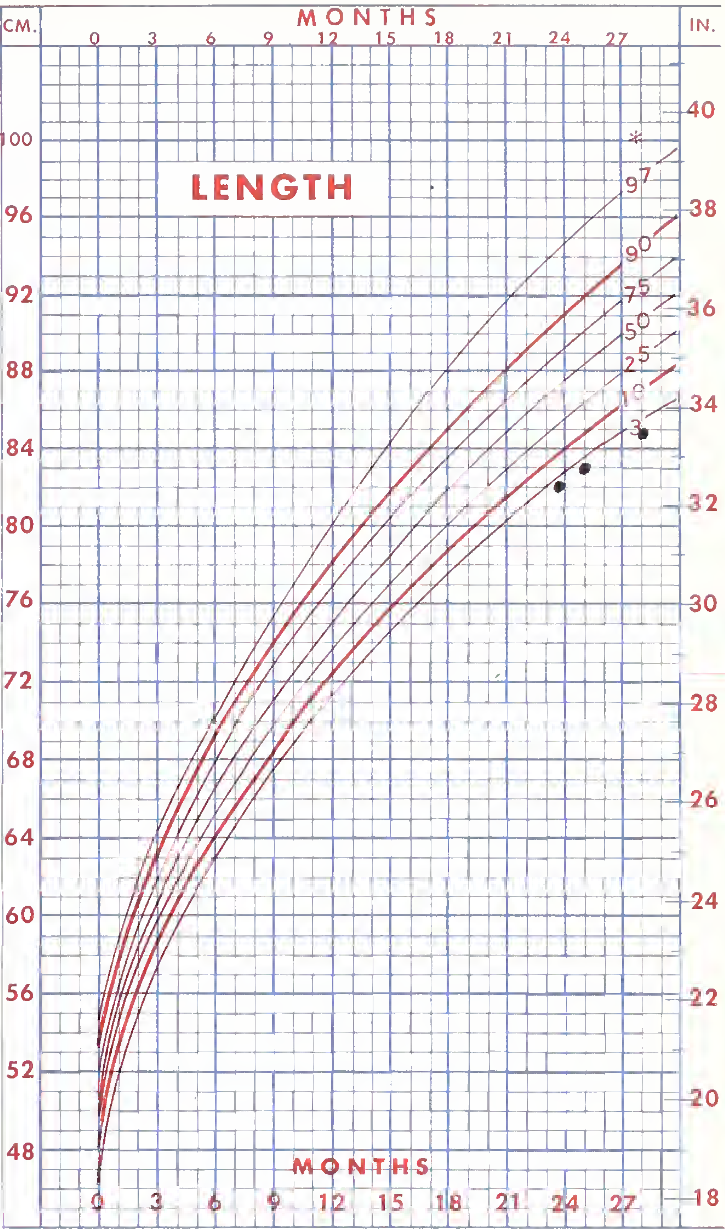
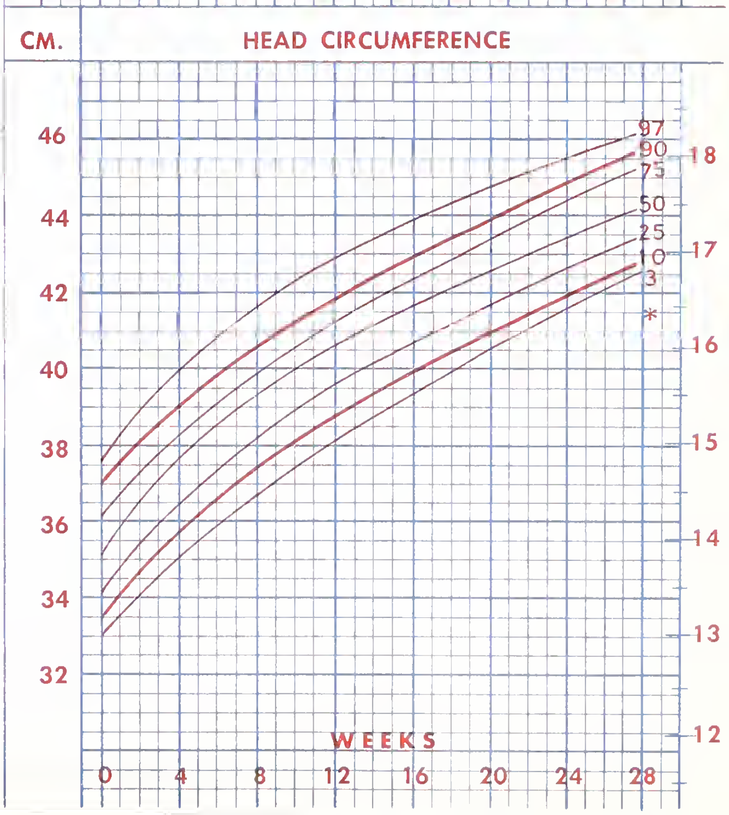




THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 303

PERCENTILE CHART FOR MEASUREMENTS OF INFANT BOYS

THIS CHART provides for infant boys standards of reference for body weight and recumbent length by month from birth to 28 months and for head circumference by week from birth to 28 weeks. It is based upon repeated measurements at selected ages of a group of more than 100 white infants of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from the infants at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 infants. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 infants of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 infants might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are presented in heavy lines to show the limits within which most infants remain. The lighter lines in the graphs divide the distributions into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

In line with common usage in the United States, the charts are ruled on a scale in pounds to represent weight. They are ruled, however, in centimeters to represent length and head circumference, because this scale facilitates accuracy in measuring and recording and centimeter rules and tapes are readily available. For the convenience of those preferring them, scales for kilograms and inches are placed outside of the principal scales and paralleling them. Therefore, if weights are taken in kilograms and lengths and head circumferences in inches, they may be plotted directly without conversion by placing a ruler at the appropriate points on the outer scales of the charts.

To determine the percentile position of any measurement at a given age, the vertical age line is located and a dot is placed where this intersects the horizontal line representing the value obtained from the measurement. Vertical lines give age by one-month intervals for weight and length and one-week intervals for head circumference; horizontal lines give ½-pound, 1-cm. and 0.5-cm. intervals respectively. This permits by interpolation accurate placement for age to weeks, for weights to 2 ounces and for centimeters to 0.5 cm. Recognition of the position within or outside of the range held by an infant in respect to each measurement recorded calls attention to the relative size and build of the individual at the time. More importantly, comparisons of percentile positions held by these measurements at repeated periodic examinations indicate adherence to or possibly significant deviation from previous percentile positions. Under normal circumstances, one expects an infant to maintain a similar position from age to age — that is, on or near one percentile line or between the same two lines. Occasional sharp deviations or gradual but continuing shifts from one percentile position to another call for further investigation as to their causes. In all cases, readings of measurements should be checked and care should be taken to secure the same position of the infant at all examinations. The following procedures were used in obtaining these norms and therefore are recommended:

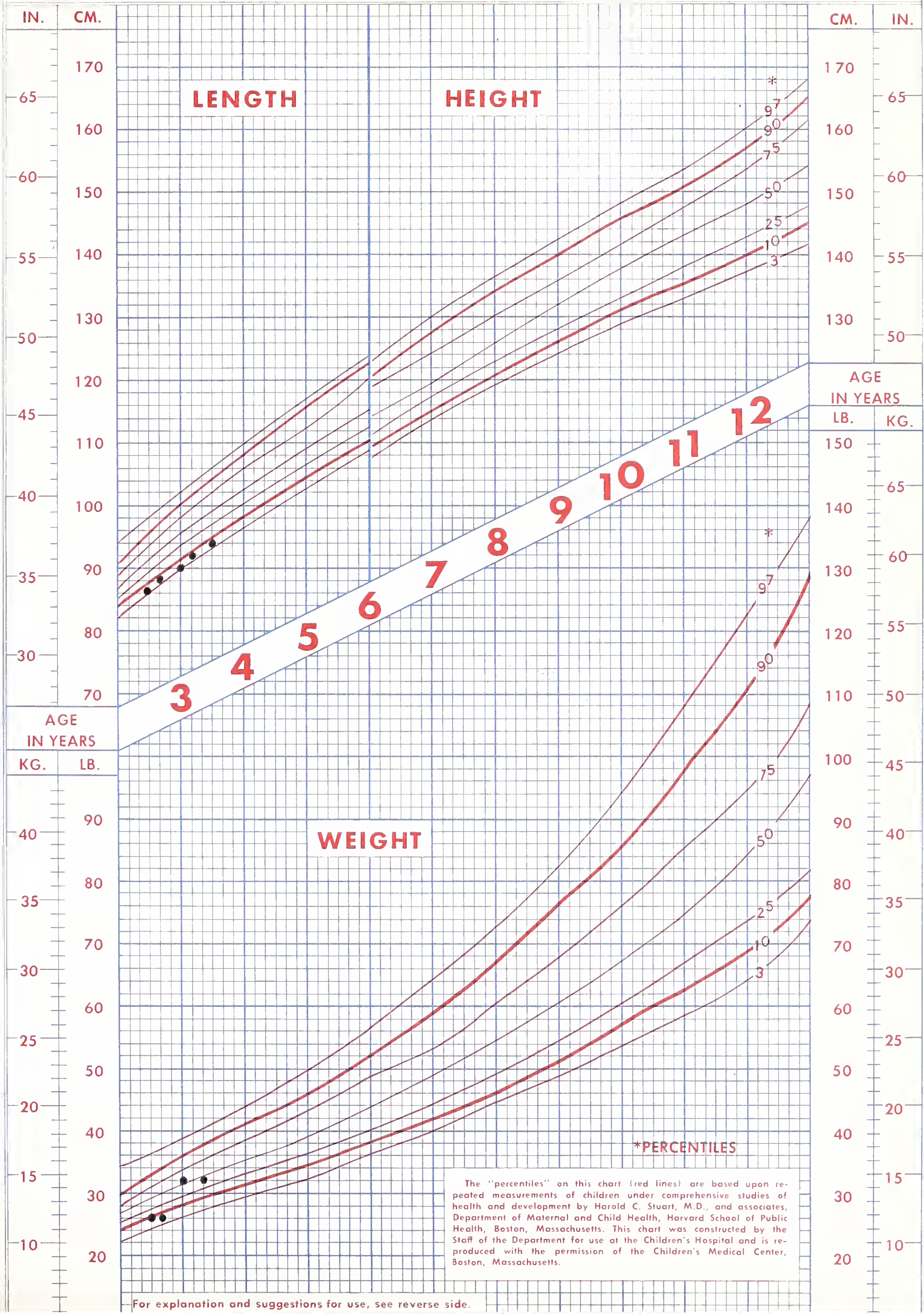
Body Weight — The infant is weighed without clothing, preferably on special infant scales.

Recumbent Length — The infant lies relaxed on a firm surface parallel to a centimeter rule or on a special infant measuring board which permits the following procedure. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. Care must be taken to secure extension at the knees, and the head should be held so that the eyes face the ceiling.

Head Circumference — This measurement is more satisfactory if taken with the infant lying on his back. The tape is passed around the head from above and placed anteriorly over the lower forehead just above the supraorbital ridges. With the position of the tape thus fixed anteriorly, the largest circumference is obtained by passing it posteriorly over the most prominent part of the occiput.

BOYS

NAME Patton, Micheal BIRTH DATE 9-28-52 NO. 41-36-50



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THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

THIS CHART provides for boys standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white boys of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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Body Weight — The child is weighed without clothing except light undergarments.

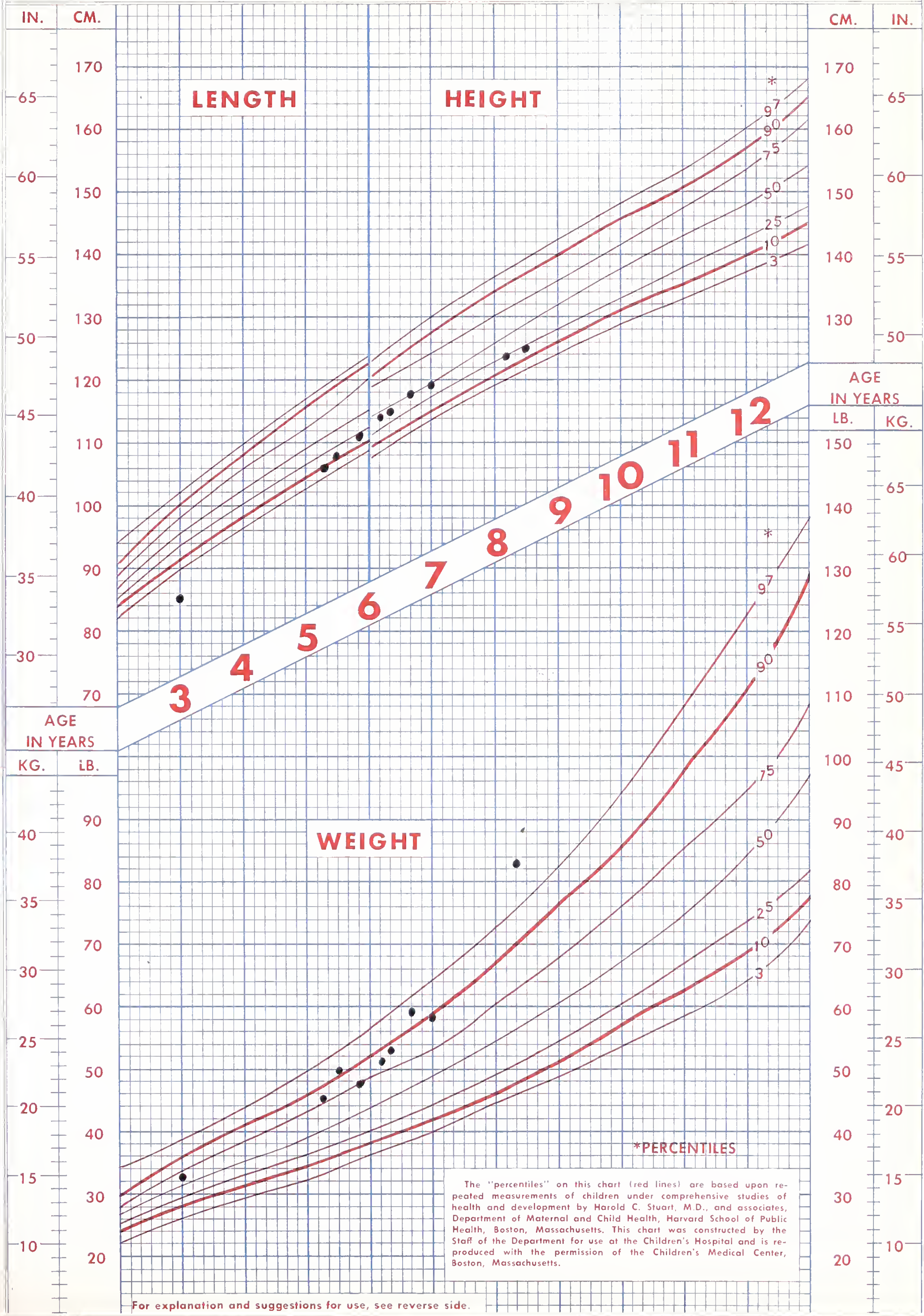
Recumbent Length — The child lies relaxed on a firm surface parallel to a centimeter rule. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. The head is held so that the eyes face the ceiling.

Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

BOYS

NAME Everett, Albert BIRTH DATE 7-17-47 NO. C 14968



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FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

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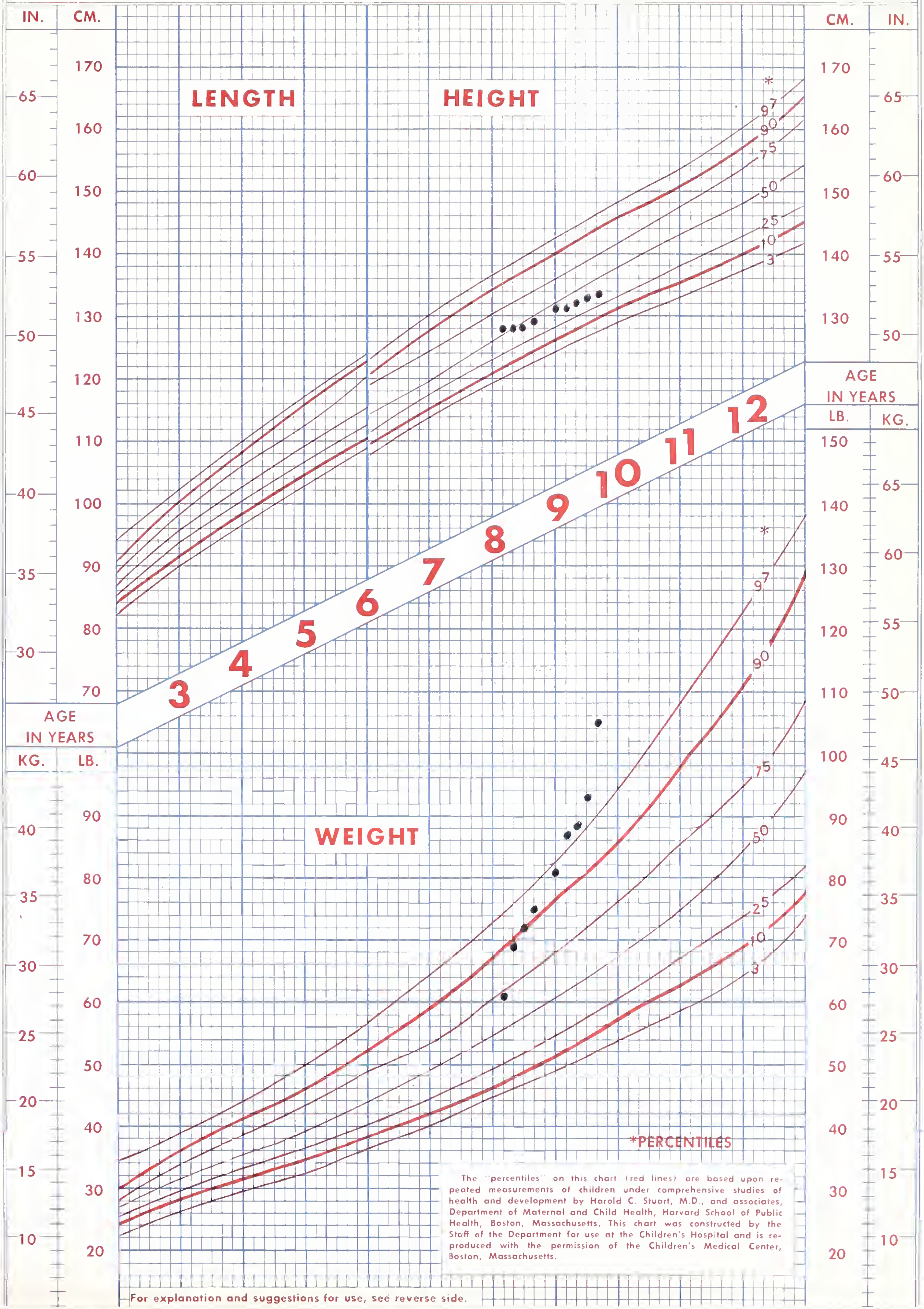
Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

BOYS

NAME Scasino, Andrew BIRTH DATE 6-7-46 NO. 41-15-37

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

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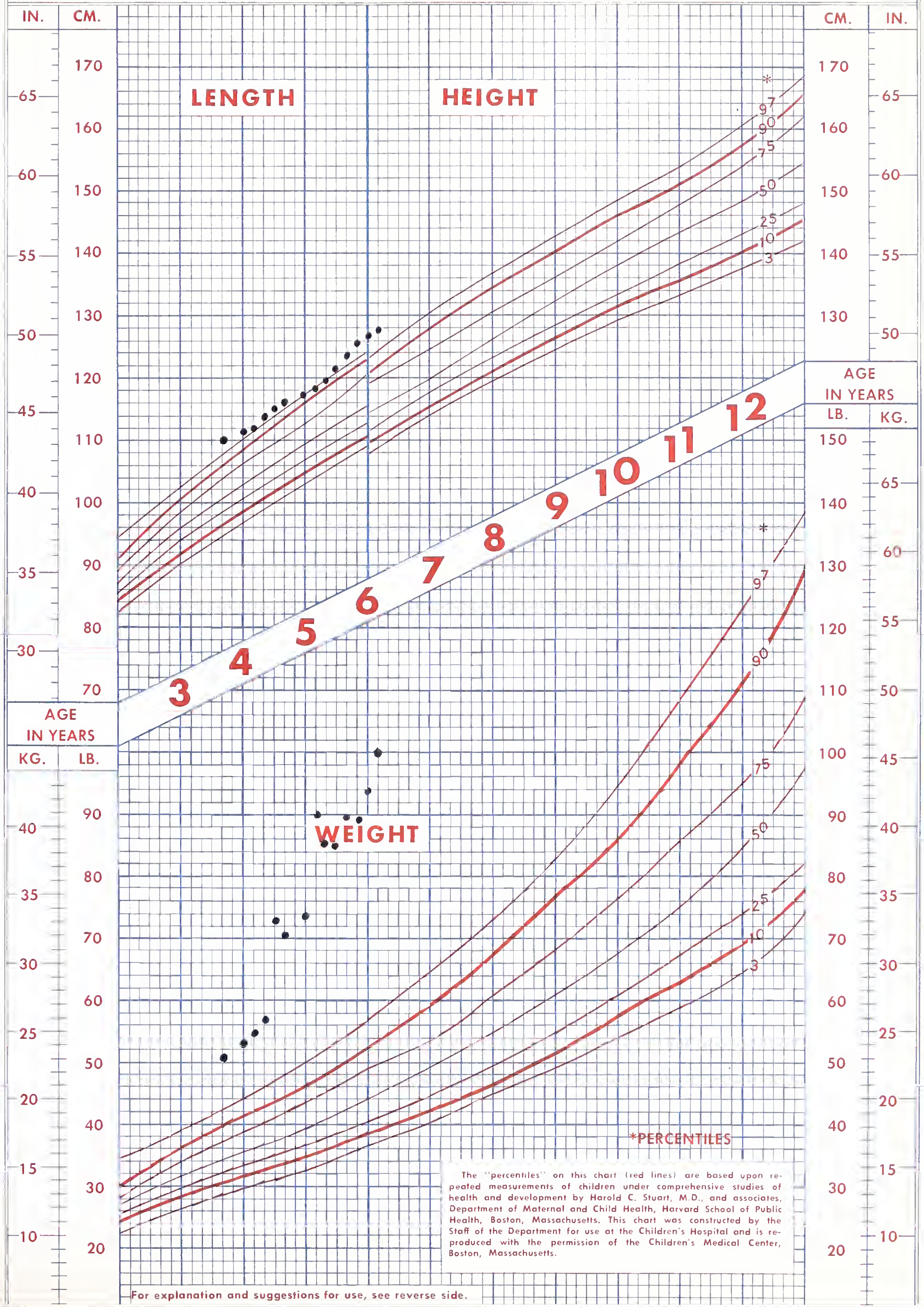
Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

BOYS

NAME Hahn, Roger BIRTH DATE 10-18-49 NO. 52-20-87-

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

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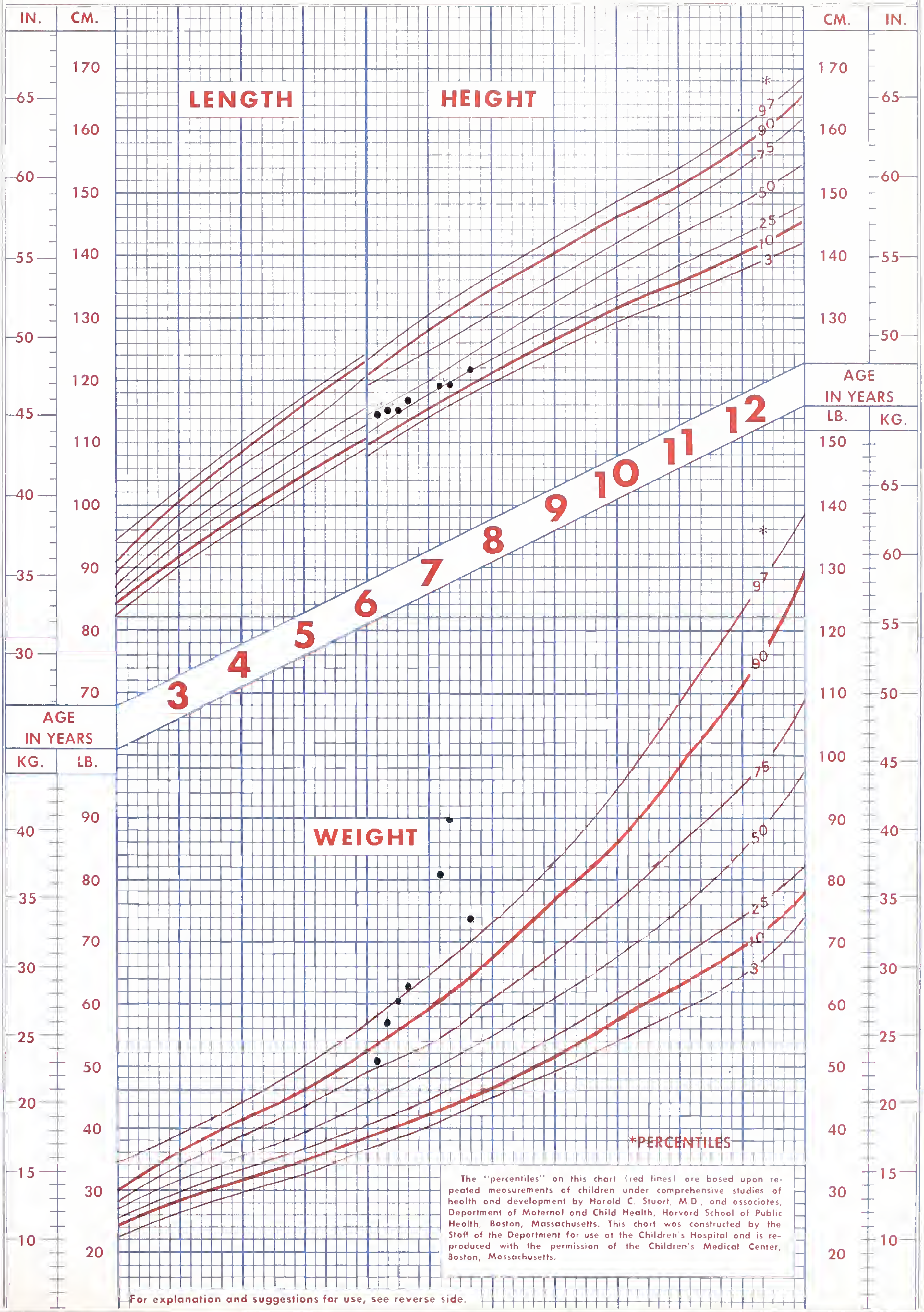
BOYS

NAME Andrews, Frederick **BIRTH DATE** 5-28-48 **NO.** 41-12-96

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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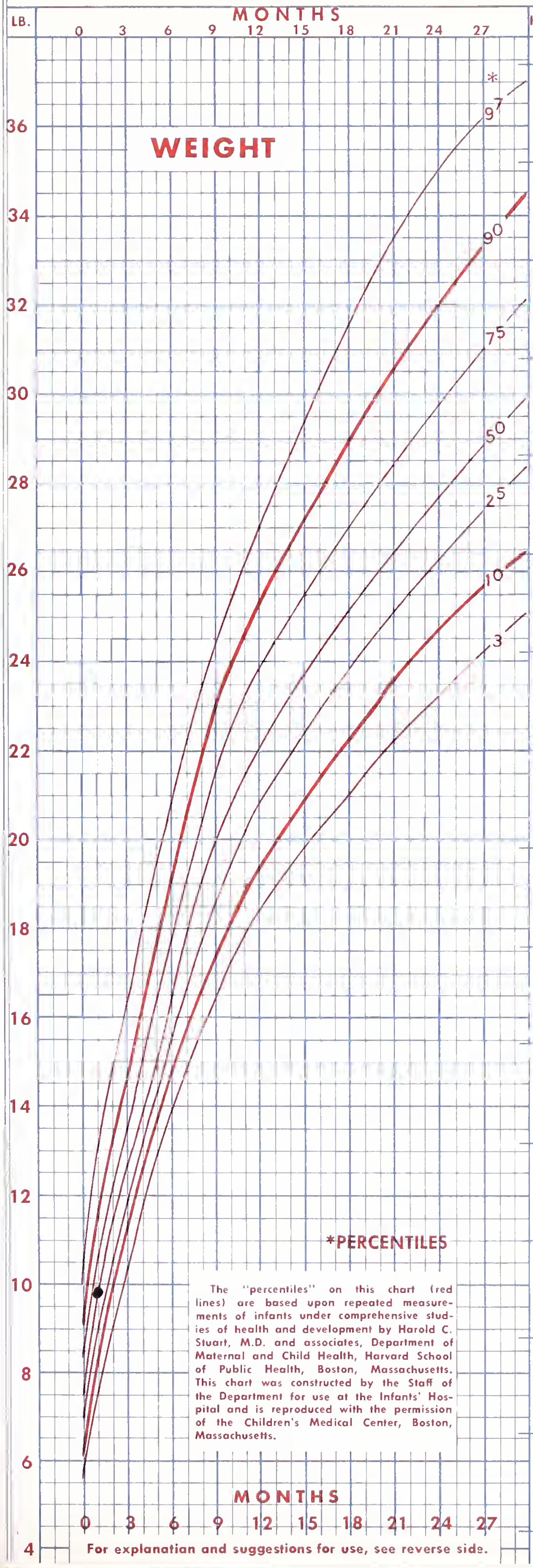
Recumbent Length — The child lies relaxed on a firm surface parallel to a centimeter rule. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. The head is held so that the eyes face the ceiling.

Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

INFANT BOYS

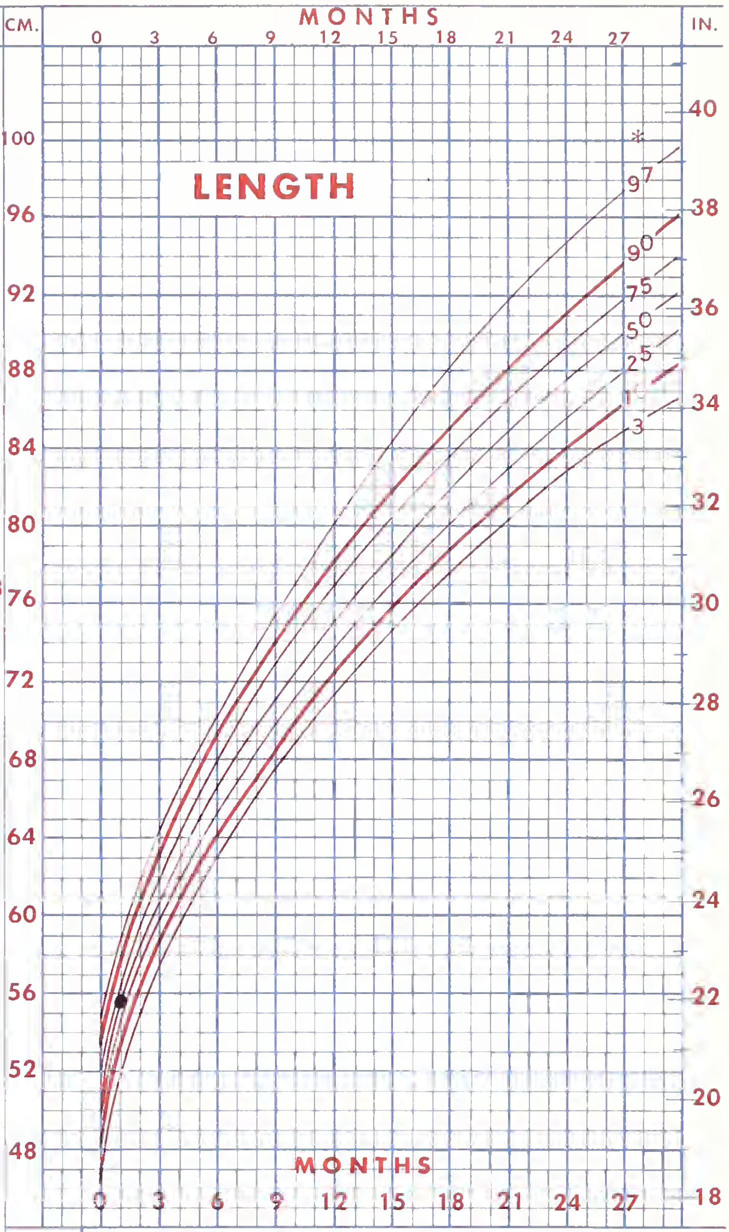
NAME Jarvis, Lawrence **BIRTH DATE** 5-16-50 **NO.** C41738

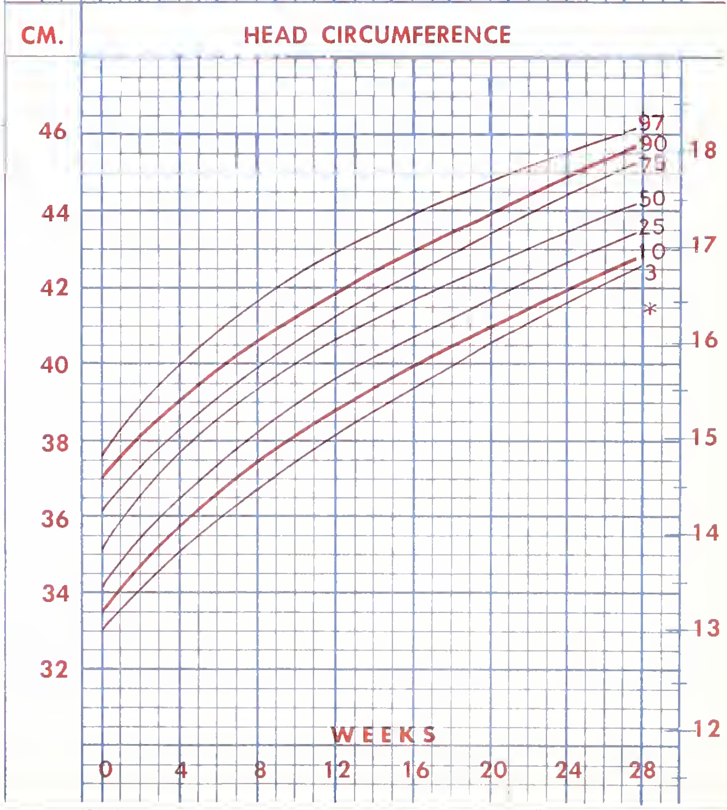
THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



The "percentiles" on this chart (red lines) are based upon repeated measurements of infants under comprehensive studies of health and development by Harold C. Stuart, M.D. and associates, Department of Maternal and Child Health, Harvard School of Public Health, Boston, Massachusetts. This chart was constructed by the Staff of the Department for use at the Infants' Hospital and is reproduced with the permission of the Children's Medical Center, Boston, Massachusetts.

For explanation and suggestions for use, see reverse side.





FORM 303

PERCENTILE CHART FOR MEASUREMENTS OF INFANT BOYS

THIS CHART provides for infant boys standards of reference for body weight and recumbent length by month from birth to 28 months and for head circumference by week from birth to 28 weeks. It is based upon repeated measurements at selected ages of a group of more than 100 white infants of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from the infants at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 infants. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 infants of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 infants might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are presented in heavy lines to show the limits within which most infants remain. The lighter lines in the graphs divide the distributions into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

In line with common usage in the United States, the charts are ruled on a scale in pounds to represent weight. They are ruled, however, in centimeters to represent length and head circumference, because this scale facilitates accuracy in measuring and recording and centimeter rules and tapes are readily available. For the convenience of those preferring them, scales for kilograms and inches are placed outside of the principal scales and paralleling them. Therefore, if weights are taken in kilograms and lengths and head circumferences in inches, they may be plotted directly without conversion by placing a ruler at the appropriate points on the outer scales of the charts.

To determine the percentile position of any measurement at a given age, the vertical age line is located and a dot is placed where this intersects the horizontal line representing the value obtained from the measurement. Vertical lines give age by one-month intervals for weight and length and one-week intervals for head circumference; horizontal lines give ½-pound, 1-cm. and 0.5-cm. intervals respectively. This permits by interpolation accurate placement for age to weeks, for weights to 2 ounces and for centimeters to 0.5 cm. Recognition of the position within or outside of the range held by an infant in respect to each measurement recorded calls attention to the relative size and build of the individual at the time. More importantly, comparisons of percentile positions held by these measurements at repeated periodic examinations indicate adherence to or possibly significant deviation from previous percentile positions. Under normal circumstances, one expects an infant to maintain a similar position from age to age — that is, on or near one percentile line or between the same two lines. Occasional sharp deviations or gradual but continuing shifts from one percentile position to another call for further investigation as to their causes. In all cases, readings of measurements should be checked and care should be taken to secure the same position of the infant at all examinations. The following procedures were used in obtaining these norms and therefore are recommended:

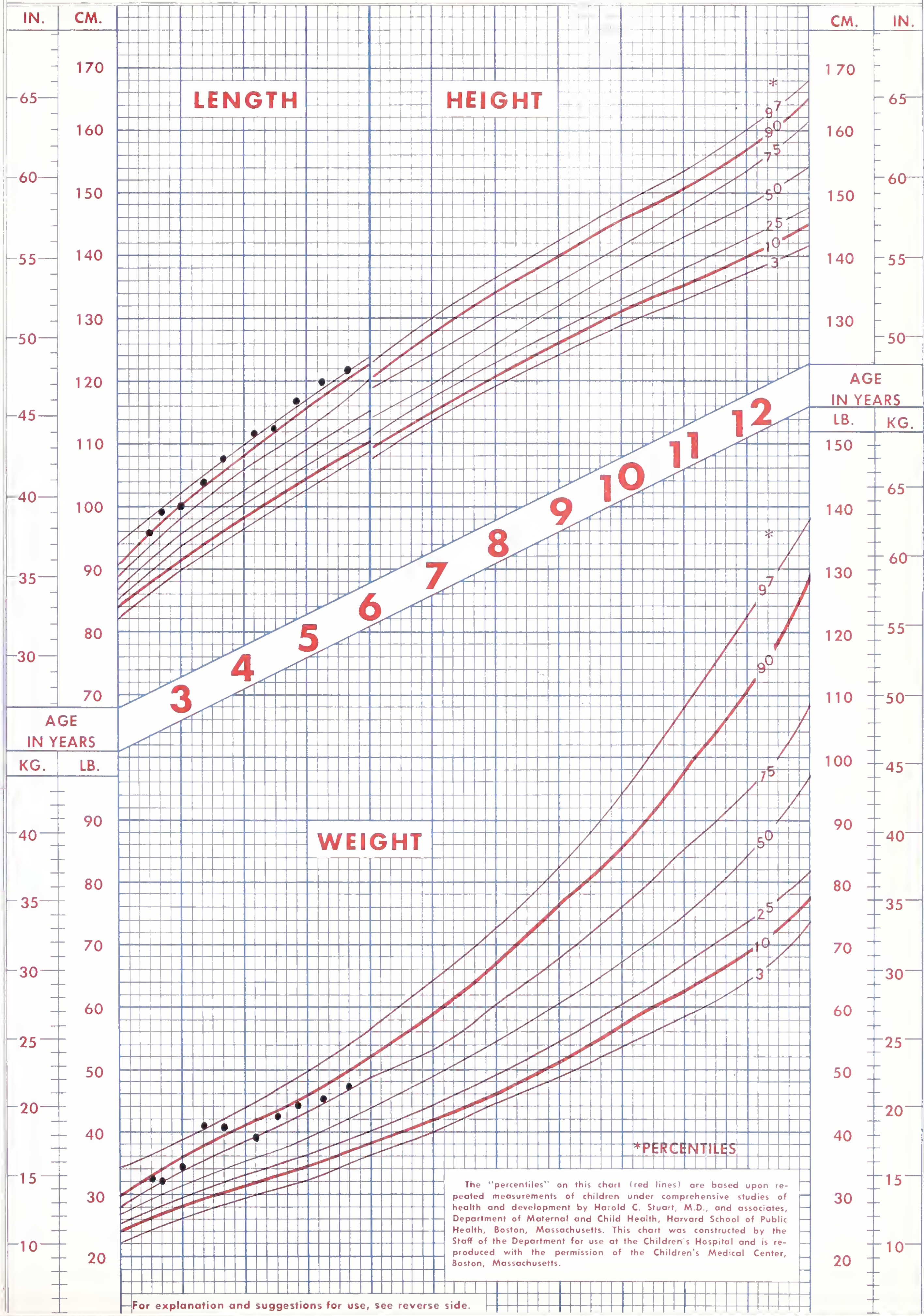
Body Weight — The infant is weighed without clothing, preferably on special infant scales.

Recumbent Length — The infant lies relaxed on a firm surface parallel to a centimeter rule or on a special infant measuring board which permits the following procedure. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. Care must be taken to secure extension at the knees, and the head should be held so that the eyes face the ceiling.

Head Circumference — This measurement is more satisfactory if taken with the infant lying on his back. The tape is passed around the head from above and placed anteriorly over the lower forehead just above the supraorbital ridges. With the position of the tape thus fixed anteriorly, the largest circumference is obtained by passing it posteriorly over the most prominent part of the occiput.

BOYS

NAME Jarvis, Lawrence **BIRTH DATE** 5-16-50 **NO.** C41738



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THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

THIS CHART provides for boys standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white boys of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

In line with common usage in the United States, the charts are ruled on a scale in pounds to represent weight. They are ruled, however, in centimeters to represent length under 6 years and height thereafter, because this scale facilitates accuracy in measuring and recording and centimeter rules and tapes are readily available. For the convenience of those preferring them, scales for kilograms and inches are placed outside of the principal scales and paralleling them. Therefore, if weights are taken in kilograms and lengths and heights in inches, they may be plotted directly without conversion by placing a ruler at the appropriate points on the outer scales of the chart.

To determine the percentile position of any measurement at a given age, the vertical age line is located and a dot is placed where this intersects the horizontal line representing the value obtained from the measurement. Vertical lines give age by 2-month intervals and horizontal lines by 2-pound and 2-cm. intervals. This permits by interpolation accurate placement for age to ½ month and for measurements to ½ pound or 0.5 cm. Recognition of the position held by a child within or outside of the range in respect to each measurement recorded calls attention to the relative size and build of the individual at the time. More importantly, comparisons of percentile positions held by these measurements at repeated periodic examinations indicate adherence to or possibly significant deviation from previous percentile positions. Under normal circumstances, one expects a child to maintain a similar position from age to age — that is, on or near one percentile line or between the same two lines. Occasionally encountered sharp deviations or more gradual but continuing shifts from one percentile position to another call for further investigation as to their causes. In all cases, readings of measurements should be checked and care should be taken to secure the same position of the child accurately at all examinations. The following procedures were used in obtaining these norms and therefore are recommended:

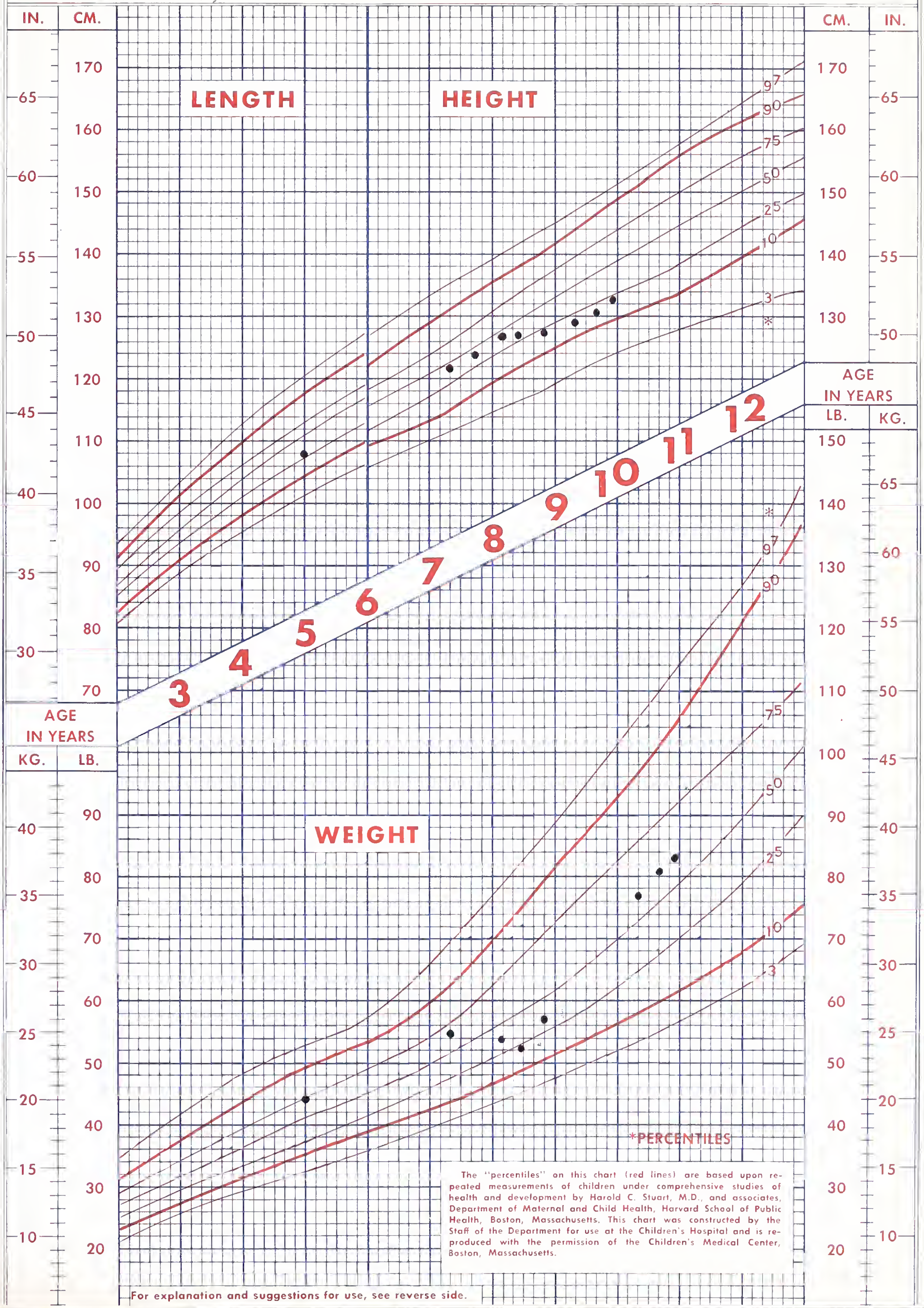
Body Weight — The child is weighed without clothing except light undergarments.

Recumbent Length — The child lies relaxed on a firm surface parallel to a centimeter rule. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. The head is held so that the eyes face the ceiling.

Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

GIRLS

NAME Infantino, Donna BIRTH DATE 4-5-45 NO. C32086



*PERCENTILES

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THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 304

PERCENTILE CHART FOR MEASUREMENTS OF GIRLS

THIS CHART provides for girls standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white girls of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

In line with common usage in the United States, the charts are ruled on a scale in pounds to represent weight. They are ruled, however, in centimeters to represent length under 6 years and height thereafter, because this scale facilitates accuracy in measuring and recording and centimeter rules and tapes are readily available. For the convenience of those preferring them, scales for kilograms and inches are placed outside of the principal scales and paralleling them. Therefore, if weights are taken in kilograms and lengths and heights in inches, they may be plotted directly without conversion by placing a ruler at the appropriate points on the outer scales of the chart.

To determine the percentile position of any measurement at a given age, the vertical age line is located and a dot is placed where this intersects the horizontal line representing the value obtained from the measurement. Vertical lines give age by 2-month intervals and horizontal lines by 2-pound and 2-cm. intervals. This permits by interpolation accurate placement for age to ½ month and for measurements to ½ pound or 0.5 cm. Recognition of the position held by a child within or outside of the range in respect to each measurement recorded calls attention to the relative size and build of the individual at the time. More importantly, comparisons of percentile positions held by these measurements at repeated periodic examinations indicate adherence to or possibly significant deviation from previous percentile positions. Under normal circumstances, one expects a child to maintain a similar position from age to age — that is, on or near one percentile line or between the same two lines. Occasionally encountered sharp deviations or more gradual but continuing shifts from one percentile position to another call for further investigation as to their causes. In all cases, readings of measurements should be checked and care should be taken to secure the same position of the child accurately at all examinations. The following procedures were used in obtaining these norms and therefore are recommended:

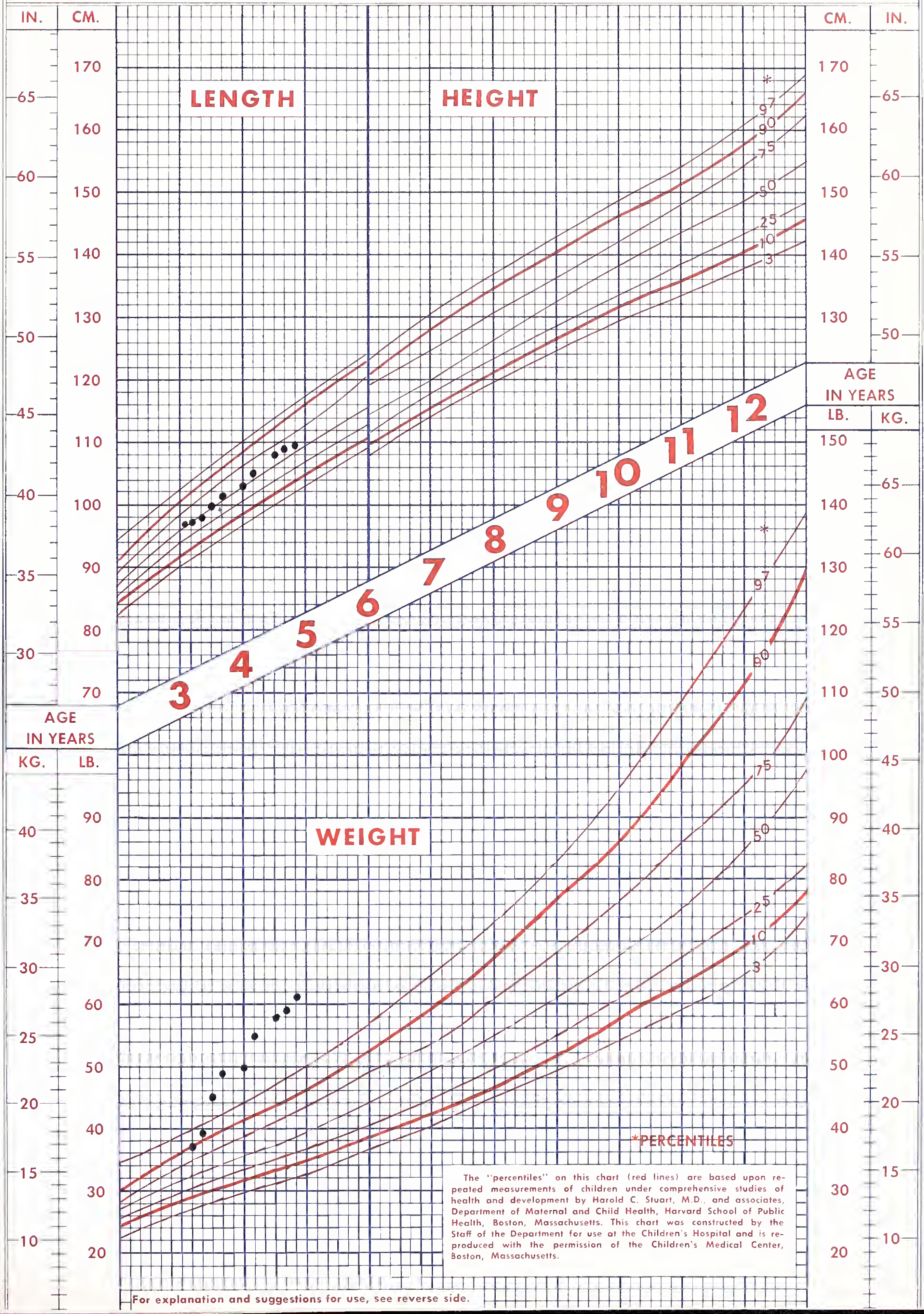
Body Weight — The child is weighed without clothing except light undergarments.

Recumbent Length — The child lies relaxed on a firm surface parallel to a centimeter rule. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. The head is held so that the eyes face the ceiling.

Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

BOYS

NAME Quinlivan, Micheal BIRTH DATE 3-31-51 NO. 40-62-81



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THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

THIS CHART provides for boys standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white boys of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

In line with common usage in the United States, the charts are ruled on a scale in pounds to represent weight. They are ruled, however, in centimeters to represent length under 6 years and height thereafter, because this scale facilitates accuracy in measuring and recording and centimeter rules and tapes are readily available. For the convenience of those preferring them, scales for kilograms and inches are placed outside of the principal scales and paralleling them. Therefore, if weights are taken in kilograms and lengths and heights in inches, they may be plotted directly without conversion by placing a ruler at the appropriate points on the outer scales of the chart.

To determine the percentile position of any measurement at a given age, the vertical age line is located and a dot is placed where this intersects the horizontal line representing the value obtained from the measurement. Vertical lines give age by 2-month intervals and horizontal lines by 2-pound and 2-cm. intervals. This permits by interpolation accurate placement for age to ½ month and for measurements to ½ pound or 0.5 cm. Recognition of the position held by a child within or outside of the range in respect to each measurement recorded calls attention to the relative size and build of the individual at the time. More importantly, comparisons of percentile positions held by these measurements at repeated periodic examinations indicate adherence to or possibly significant deviation from previous percentile positions. Under normal circumstances, one expects a child to maintain a similar position from age to age — that is, on or near one percentile line or between the same two lines. Occasionally encountered sharp deviations or more gradual but continuing shifts from one percentile position to another call for further investigation as to their causes. In all cases, readings of measurements should be checked and care should be taken to secure the same position of the child accurately at all examinations. The following procedures were used in obtaining these norms and therefore are recommended:

Body Weight — The child is weighed without clothing except light undergarments.

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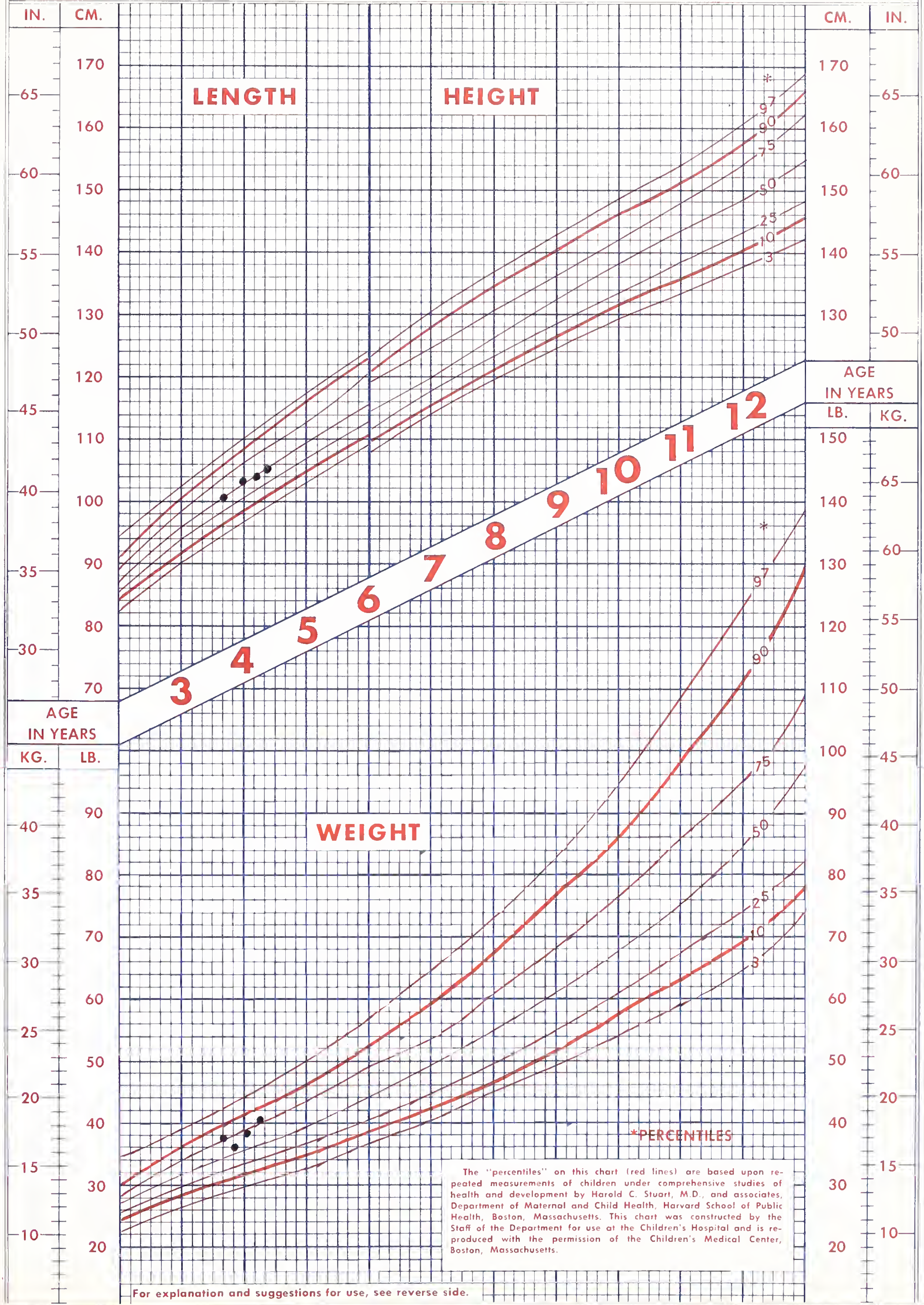
Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

BOYS

NAME Ober, Richard **BIRTH DATE** 11-30-51 **NO.** 32-28-40



*PERCENTILES

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THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

THIS CHART provides for boys standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white boys of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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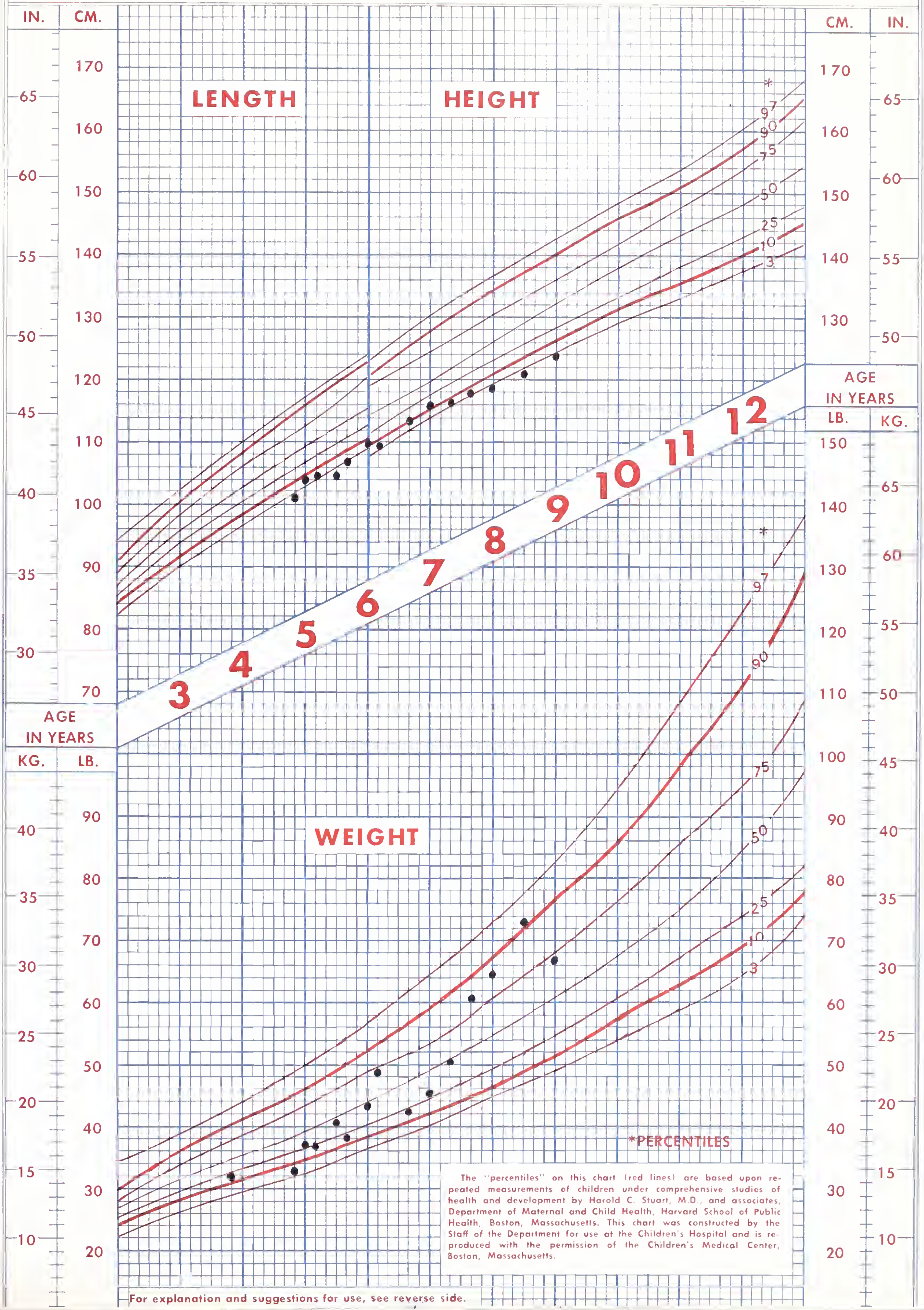
Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

BOYS

NAME Garthwaite, Brian **BIRTH DATE** 2-7-47 **NO.** 058046

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

THIS CHART provides for boys standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white boys of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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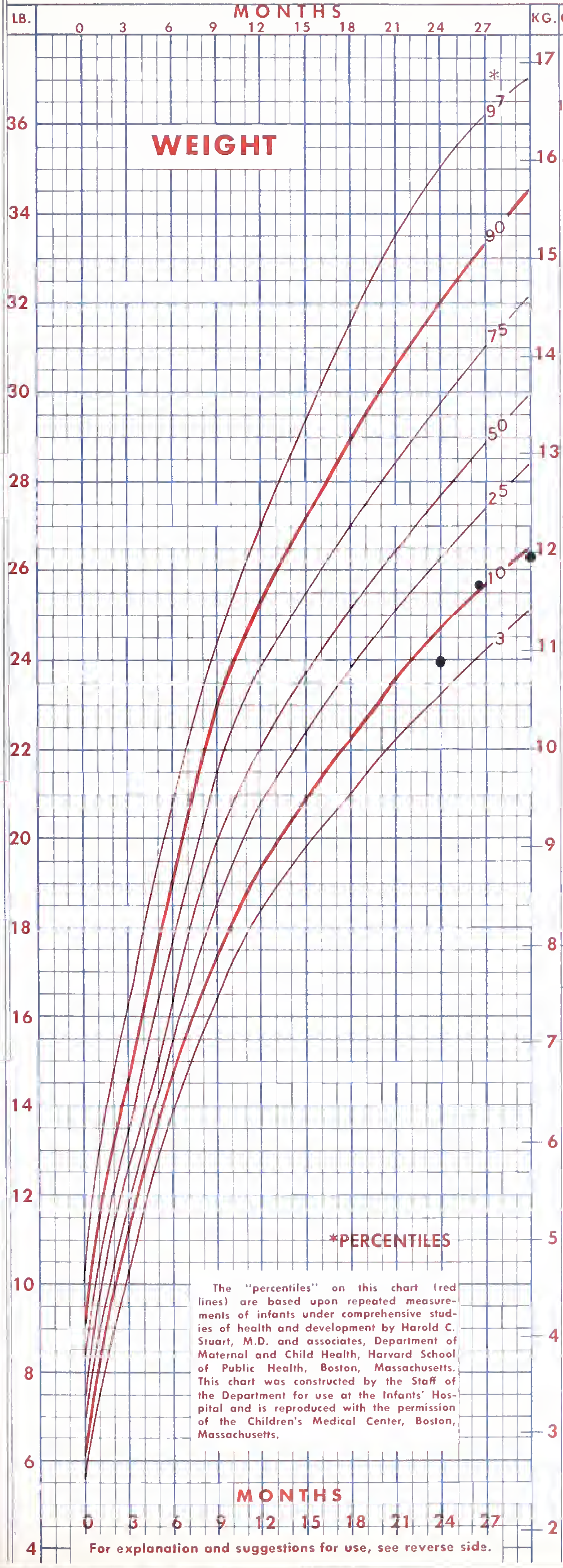
Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

INFANT BOYS

NAME Iannucci, Bruce BIRTH DATE 1-20-52 NO. 40-21-82

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



*PERCENTILES

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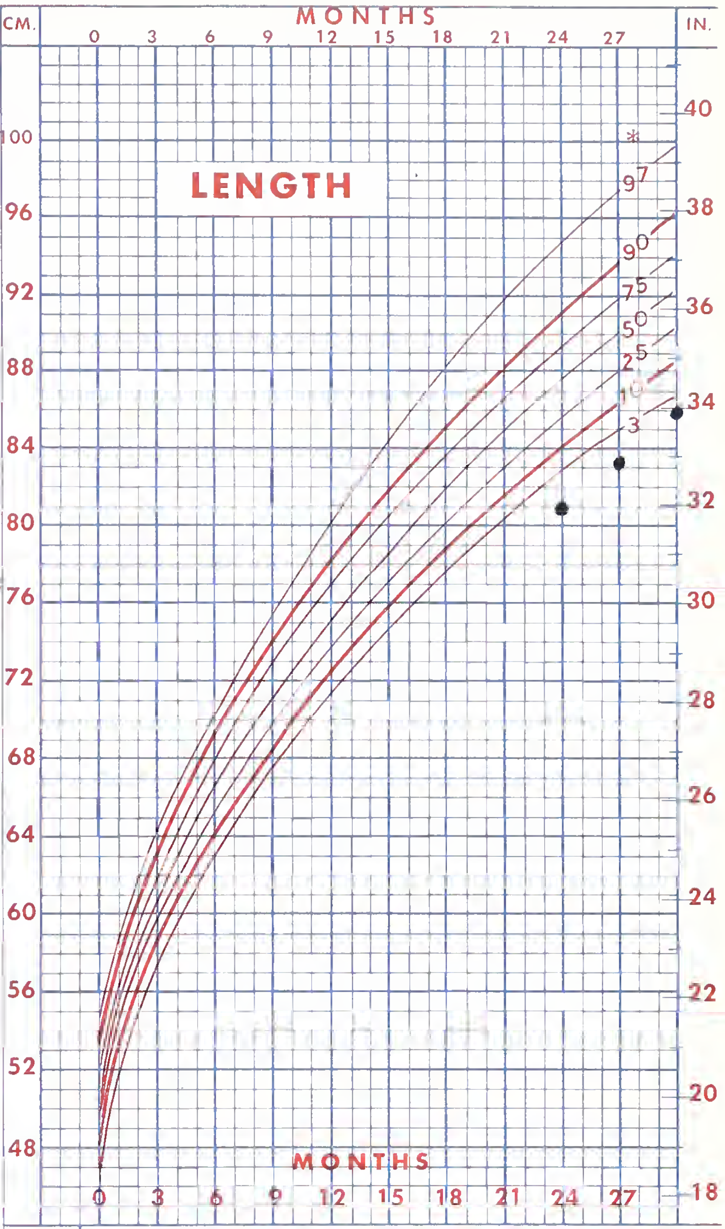

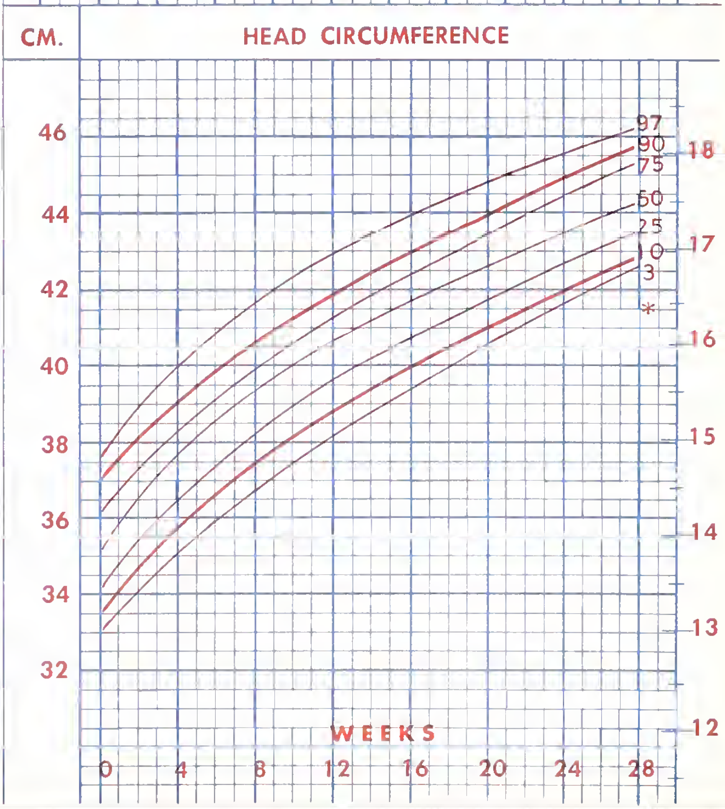

For explanation and suggestions for use, see reverse side.

FORM 303

PERCENTILE CHART FOR MEASUREMENTS OF INFANT BOYS

THIS CHART provides for infant boys standards of reference for body weight and recumbent length by month from birth to 28 months and for head circumference by week from birth to 28 weeks. It is based upon repeated measurements at selected ages of a group of more than 100 white infants of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from the infants at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 infants. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 infants of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 infants might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are presented in heavy lines to show the limits within which most infants remain. The lighter lines in the graphs divide the distributions into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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To determine the percentile position of any measurement at a given age, the vertical age line is located and a dot is placed where this intersects the horizontal line representing the value obtained from the measurement. Vertical lines give age by one-month intervals for weight and length and one-week intervals for head circumference; horizontal lines give ½-pound, 1-cm. and 0.5-cm. intervals respectively. This permits by interpolation accurate placement for age to weeks, for weights to 2 ounces and for centimeters to 0.5 cm. Recognition of the position within or outside of the range held by an infant in respect to each measurement recorded calls attention to the relative size and build of the individual at the time. More importantly, comparisons of percentile positions held by these measurements at repeated periodic examinations indicate adherence to or possibly significant deviation from previous percentile positions. Under normal circumstances, one expects an infant to maintain a similar position from age to age — that is, on or near one percentile line or between the same two lines. Occasional sharp deviations or gradual but continuing shifts from one percentile position to another call for further investigation as to their causes. In all cases, readings of measurements should be checked and care should be taken to secure the same position of the infant at all examinations. The following procedures were used in obtaining these norms and therefore are recommended:

Body Weight — The infant is weighed without clothing, preferably on special infant scales.

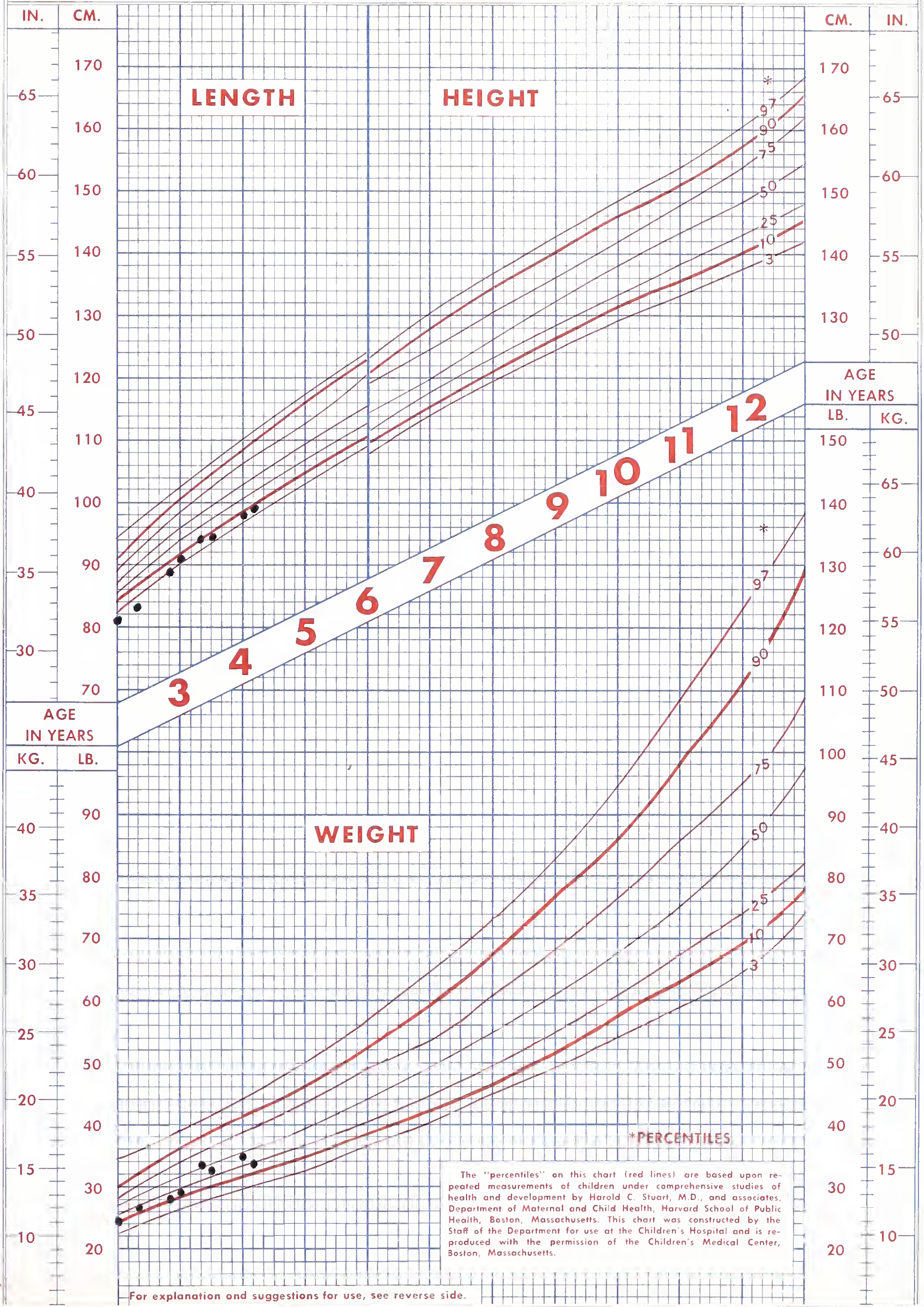
Recumbent Length — The infant lies relaxed on a firm surface parallel to a centimeter rule or on a special infant measuring board which permits the following procedure. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. Care must be taken to secure extension at the knees, and the head should be held so that the eyes face the ceiling.

Head Circumference — This measurement is more satisfactory if taken with the infant lying on his back. The tape is passed around the head from above and placed anteriorly over the lower forehead just above the supraorbital ridges. With the position of the tape thus fixed anteriorly, the largest circumference is obtained by passing it posteriorly over the most prominent part of the occiput.

BOYS

NAME Iannucci, Bruce **BIRTH DATE** 1-20-52 **NO.** 40-21-82

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



*PERCENTILES

The "percentiles" on this chart (red lines) are based upon repeated measurements of children under comprehensive studies of health and development by Harold C. Stuart, M.D., and associates, Department of Maternal and Child Health, Harvard School of Public Health, Boston, Massachusetts. This chart was constructed by the Staff of the Department for use at the Children's Hospital and is reproduced with the permission of the Children's Medical Center, Boston, Massachusetts.

For explanation and suggestions for use, see reverse side.

FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

THIS CHART provides for boys standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white boys of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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Body Weight — The child is weighed without clothing except light undergarments.

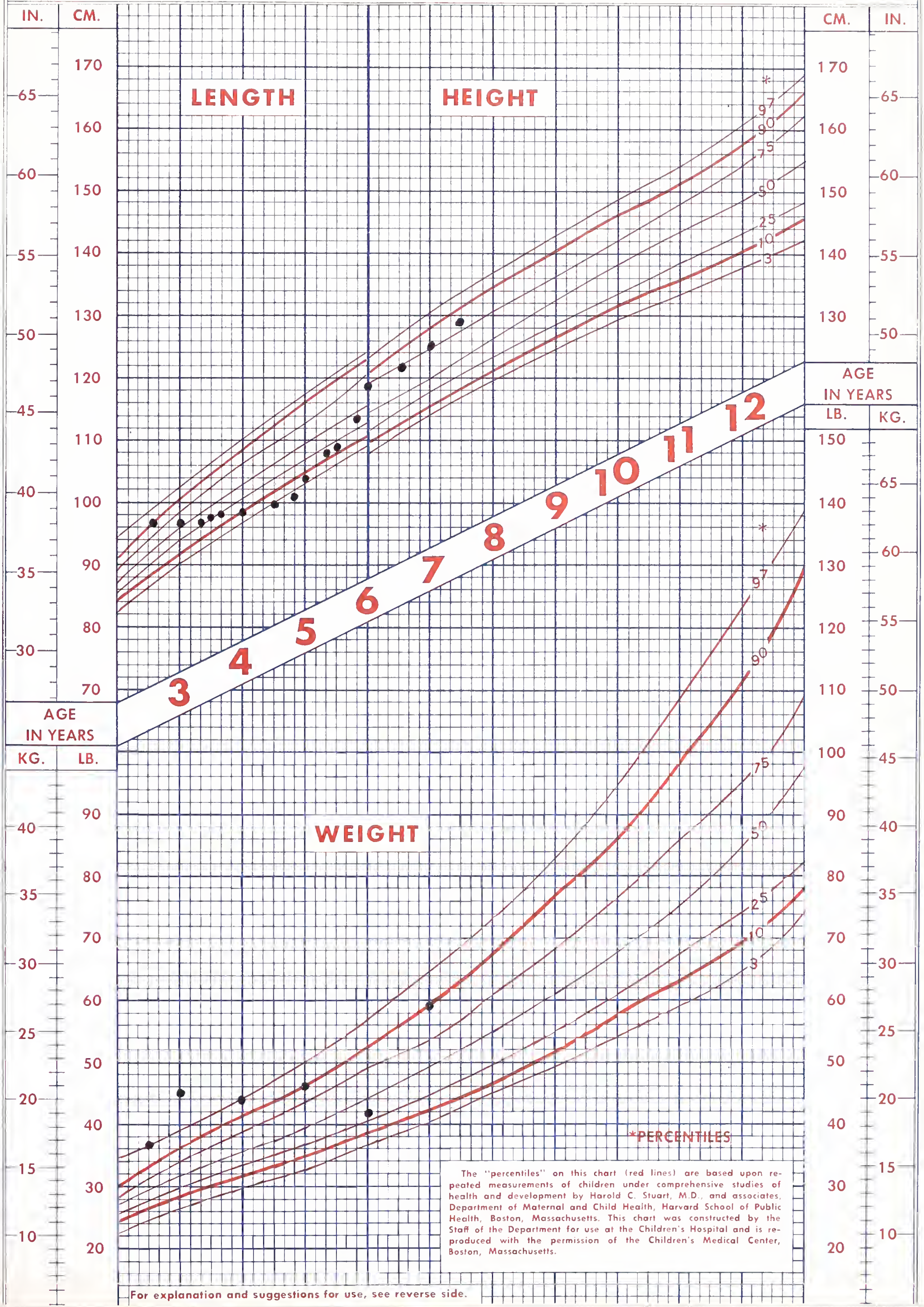
Recumbent Length — The child lies relaxed on a firm surface parallel to a centimeter rule. The soles of the feet are held firmly against a fixed upright at the zero mark on the rule, and a movable square is brought firmly against the vertex. The head is held so that the eyes face the ceiling.

Height — The child's heels should be near together, and heels, buttocks and occiput should be against a firm vertical upright mounting the measuring stick. The eyes should be horizontal and approximately in the same plane as the external auditory canals. A right angle triangle or other movable device should be placed firmly on the head at right angles to the measuring stick and the measurement read after a satisfactory position has been adopted.

BOYS

NAME Hayes, James BIRTH DATE 7-7-48 NO. 052073

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

THIS CHART provides for boys standards of reference for body weight and recumbent length at ages between 2 and 6 years and for weight and standing height from 6 to 13 years. It is based upon repeated measurements at selected ages of a group of more than 100 white boys of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from these children at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 children. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 children of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 children might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are represented in heavy lines to show the limits within which most children remain. The lighter lines in the graphs divide the distribution into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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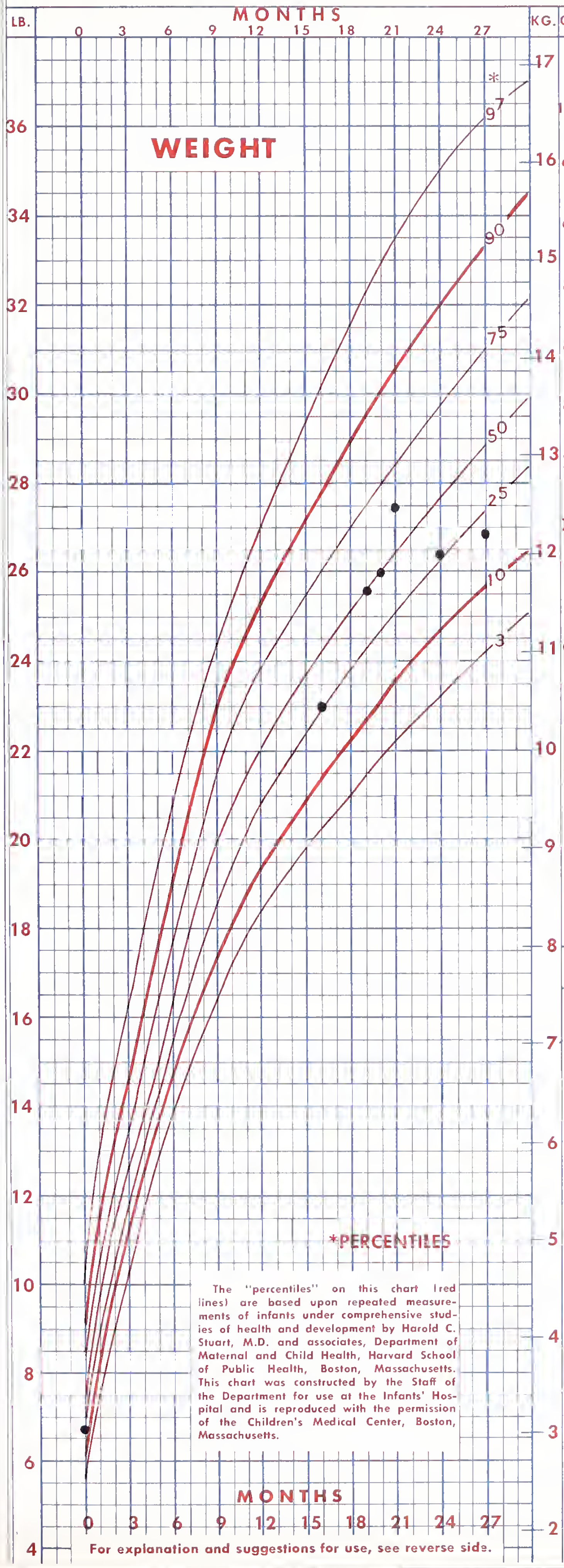
INFANT BOYS

NAME Boni, Micheal BIRTH DATE 3-30-53 NO. 38-57-61



*PERCENTILES

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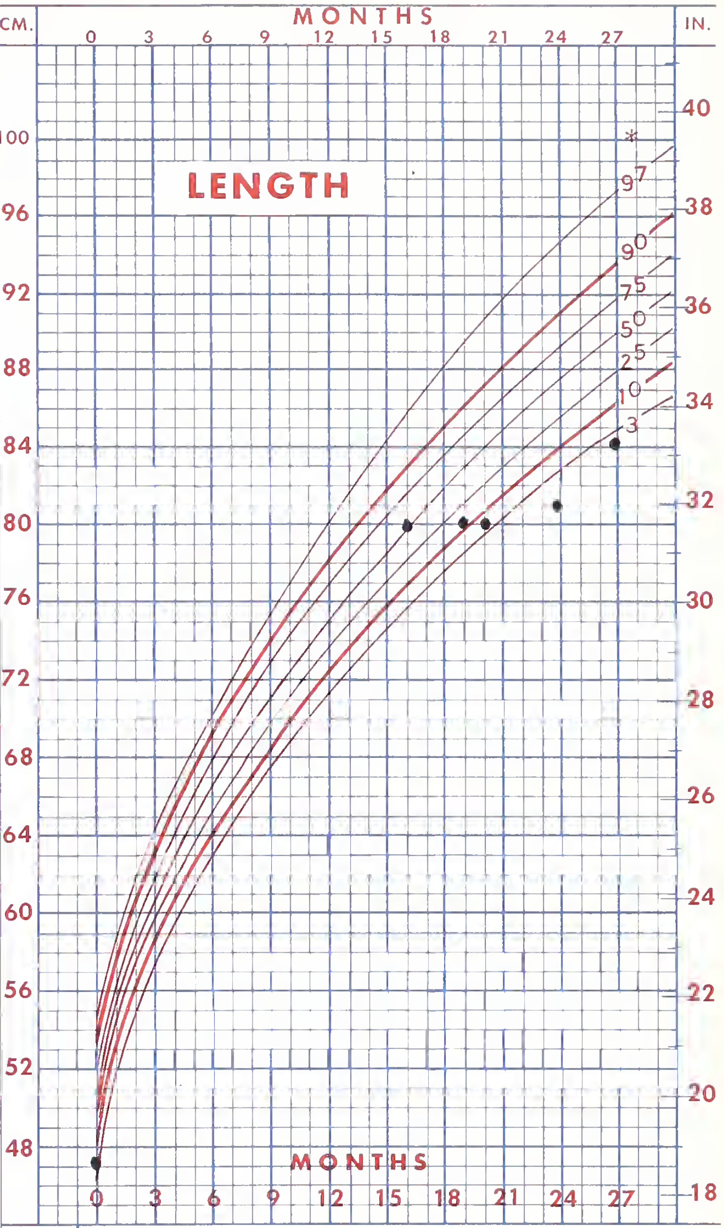

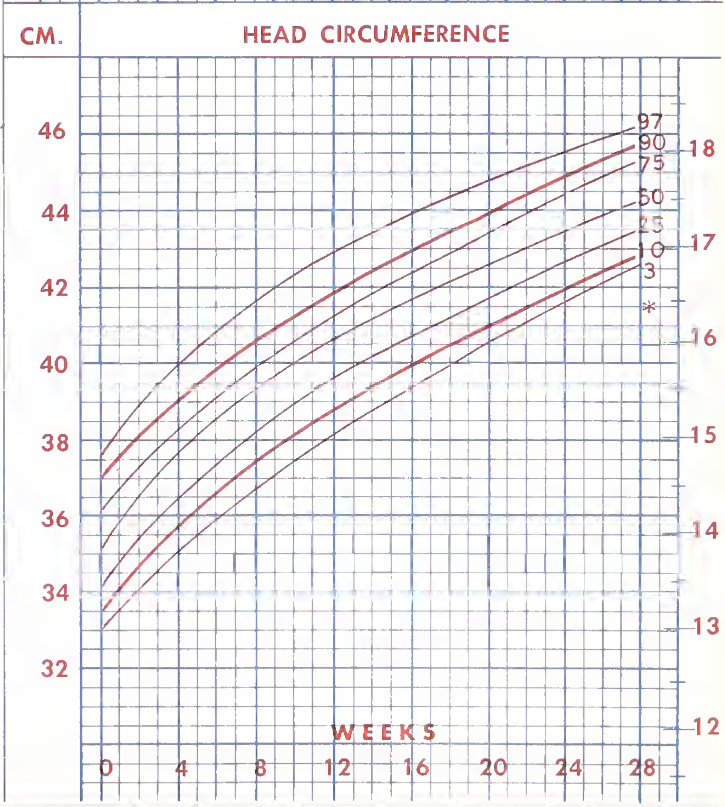

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART

FORM 303

PERCENTILE CHART FOR MEASUREMENTS OF INFANT BOYS

THIS CHART provides for infant boys standards of reference for body weight and recumbent length by month from birth to 28 months and for head circumference by week from birth to 28 weeks. It is based upon repeated measurements at selected ages of a group of more than 100 white infants of North European ancestry living under normal conditions of health and home life in Boston, Mass. The distribution of the measurements obtained from the infants at each age is expressed in percentiles, each percentile giving a value which represents a particular position in the normal range of occurrences. The number of the percentile refers to the position which a measurement of the given value would hold in any typical series of 100 infants. Thus, the 10th percentile gives the value for the tenth in any hundred; that is, 9 infants of the same sex and age would be expected to be smaller in the measurement under consideration while 90 would be expected to be larger than the figure given. Similarly the 90th percentile would indicate that 89 infants might be expected to be smaller than the figure given while 10 would be larger. The 50th percentile represents the median or midposition in the customary range. Here, the 10th and 90th percentiles are presented in heavy lines to show the limits within which most infants remain. The lighter lines in the graphs divide the distributions into segments for ready recognition and description of individual differences as well as of the "regularity" of progress. The 3rd and 97th percentiles represent unusual though not necessarily abnormal findings.

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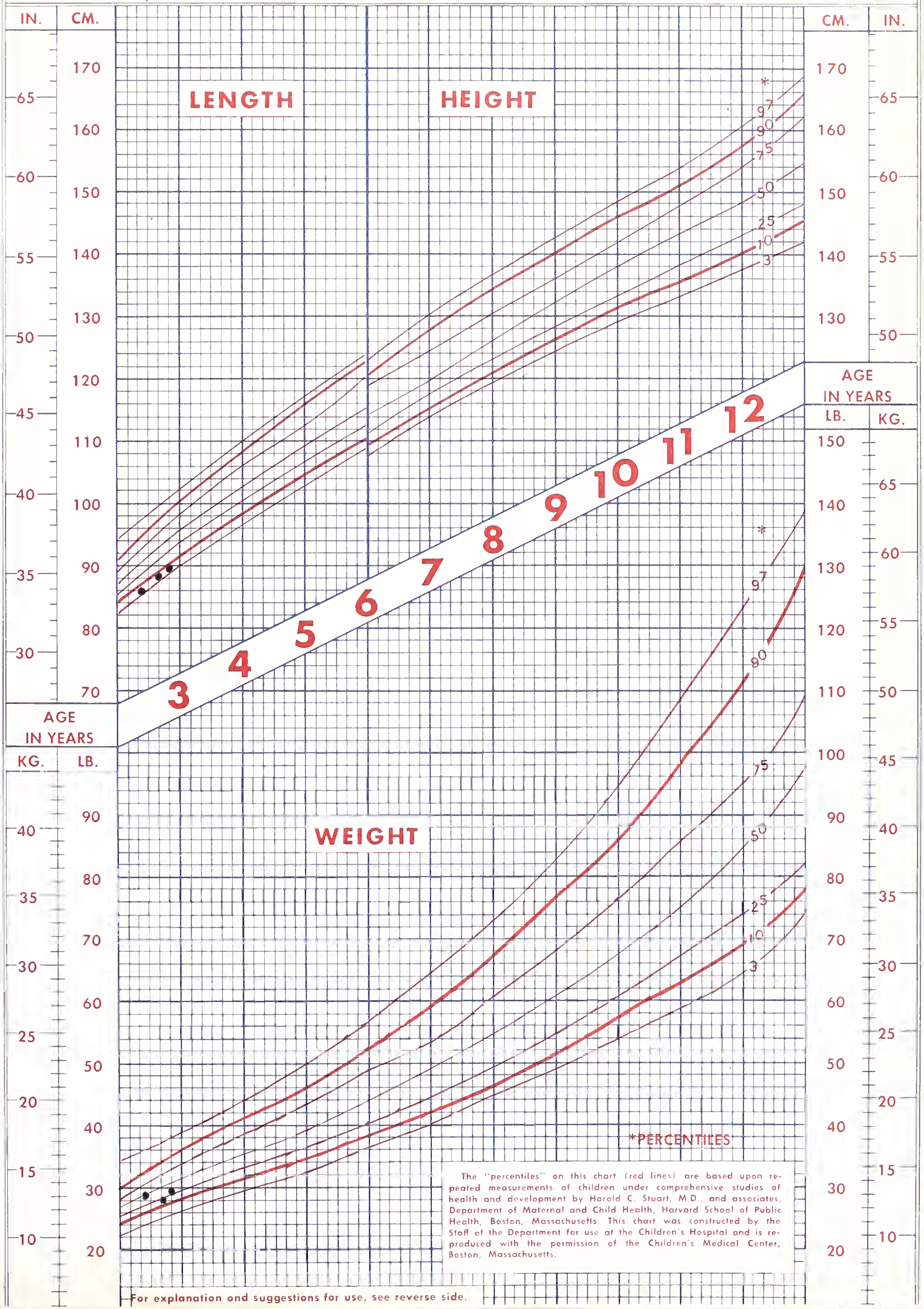
BOYS

NAME Boni, icheal BIRTH DATE 3-20-53 NO. 38-57-61

THE CHILDREN'S MEDICAL CENTER, BOSTON - ANTHROPOMETRIC CHART



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FORM 305

PERCENTILE CHART FOR MEASUREMENTS OF BOYS

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BIBLIOGRAPHY

1. Crawford, John D. Personal communication.

2. Blodgett, F. M., Burgin, L., Iezzoni, D., and Talbot, N. B. Effects of Prolonged Cortisone Therapy on the Statural Growth, Skeletal Maturation and Metabolic Status of Children. New Eng. J. Med. 254:636-641 1956

3. Blodgett, F. M. Effects of Cortisone Therapy on Growth in Children. Amer. J. Dis. Child. 90:500 1955

4. Cooke, R. E. Personal communication.

5. Meites, J. Counteraction of Cortisone Inhibition of Body, Hari, and Thymus Growth by Vitamin B-12 and Aureomycin. Pro. Soc. Exp. Bio. and Med. 78:692-695 1951

6. Wahlstrom, R. C. and Johnson, B. Connor. Effect of Cortisone and Aureomycin on Baby Pigs Fed a Vitamin B-12 Deficient Diet. Pro. Soc. Exp. Bio. and Med. 78:112-114 1951

7. Buno, W. and Goyena, H. Effect of Cortisone upon Growth in vitro of the Femur of Chick Embryo. Pro. Soc. Exp. Bio. and Med. 89:622-624 1955

8. Follis, R. H., Jr. Effect of Cortisone on Growing Bones of the Rat. Pro. Soc. Exp. Bio. and Med. 76:722-724 1951

9. Palmer, L. G., Kalonol, F., and Angrist, A. Comparitive Effects of ACTH, Cortisone, Corticosterone, Desoxycorticosterone, and Pregnenolone on Growth and Development of Infant Rats. Pro. Soc. Exp. Bio. and Med. 77:215-218 1951

10. Selye, H. Prevention of Cortisone Overdosage Effects with the Somatothrophic Hormone. Amer. J. Physio. 171:381-384 1952

11. Hill, L. W. Growth of Forty-three Allergic Children during Cortisone Administration. New Eng. J. Med. 253:821-823 1955

12. Talbot, N. B., Sobel, E. H., McArthur, J. W., and Crawford, J. D. Functional Endocrinology from Birth through Adolescence. 638 pp. Cambridge: Harvard University Press, 1952.

BIBLIOGRAPHY (Cont.)

13. Stevenson, S. Growth Failure. Ped. Clinics N. A. 433-446 May 1954

14. Forbes, H. A. W. The Assessment of Growth in Disease. The use of Wetzer's Grid illustrated by Rheumatic Fever. Lancet 263:224-225 1952

15. Wilkins, L. Disturbences in Growth. Bull. N. Y. Acad. Med. 29:280-294 1953

16. Kahn, L., Brown, G. and Goldring, D. Wetzel Grid Analysis of Rheumatic Children. J. Ped. 41:47-52 1952

17. Stuart, H. C. Personal communication.

18. Stuart, H. C., and Stevenson, S. S., Physical Growth and Developement. In Textbook of Pediatrics. Sixth edition. Edited by W. E. Nelson. 1581 pp. Philadelphia: Saunders, 1954

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